

**SENSE OF HUMOR AND POSITIVE PSYCHOLOGY:
INVESTIGATING DIMENSIONS OF SENSE OF HUMOR,
CHARACTER STRENGTHS AND LIFE SATISFACTION**

Thesis

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Liliane Müller
from Switzerland

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Prof. Dr. Willibald Ruch and PD Dr. René Proyer

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ABSTRACT

The prime aim of the present thesis was to investigate the relationship between humor in all its facets and virtuous behavior as well as life satisfaction as the two main characteristics of positive psychology. Since there is no agreement about the definition nor the dimensionality of humor the 100 statements of humorous behavior from the Humorous Behavior Q-Sort Deck (HBQD) were taken as reference for the thesis, because the HBQD is the humor questionnaire most all-encompassing so far. The measured humorous behavior was also related to other common humor questionnaires to make sure that all facets of humor were covered. To complete the picture, peer-rated humor was included as well.

The results described within the present thesis derived from a set of several studies, all with the HBQD as a basis. Results showed that not only is using a certain humor facet of relevance but also *not showing* a certain humor facet is important for living a virtue. Further, the results showed that humor is a good method to live five out of six virtues. In terms of life satisfaction results showed, that only the temperamental basis of humor, and not facets of humor, were able to predict life satisfaction over personality.

Strengths as well as limitations of the studies conducted within the scope of the present thesis were discussed. Finally, further questions that arose from the findings and draft ideas for future research were presented.

ZUSAMMENFASSUNG

Das Hauptziel der vorliegenden Dissertation war, die Beziehung zwischen Humor in all seinen Facetten und tugendhaftem Verhalten sowie Lebenszufriedenheit als Hauptmerkmal der Positiven Psychologie zu untersuchen. Da sowohl weder die Definition noch die Dimensionalität von Humor noch nicht abschliessend geklärt sind, wurden als Basis der Humormessung die 100 Aussagen zum Humorverhalten des HBQD genommen. Dies aus dem Grund, da dieser Fragebogen der bisher allumfassendste ist. Das gemessene Humorverhalten des HBQD wurde jeweils auch mit anderen gebräuchlichen Humorfragebögen in Zusammenhang gebracht um sicher zu stellen, dass alle Humorfacetten abgedeckt sind. Dabei wurden auch Fremdeinschätzungen miteinbezogen.

Die in der vorliegenden Dissertation berichteten Befunde stammen aus einer Reihe von mehreren Studien. Der HBQD wurde in allen Studien verwendet, dies um auch eine Vergleichbarkeit herzustellen und um die Replizierbarkeit der Ergebnisse zu prüfen. Es zeigte sich, dass nicht nur das Anwenden eines Humorstils relevant ist, sondern besonders für tugendhaftes Verhalten das *Nicht* Anwenden von bestimmtem Humor. Zudem konnte gezeigt werden, dass Humor für das Ausleben von fünf der sechs Tugenden relevant sein kann. Im Bezug zur Lebenszufriedenheit zeigte sich, dass nur die temperamentelle Basis von Humor und nicht spezifische Facetten Vorhersagen machen können, welche über die Persönlichkeit hinaus gehen. Abschliessend wurden Stärken und Grenzen der Studien, welche im Rahmen der vorliegenden Dissertation durchgeführt wurden diskutiert und Forschungsfragen für zukünftige Studien wurden abgeleitet.

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GENERAL INTRODUCTION

Relevance of this dissertation

This dissertation has the goal of investigating sense of humor and its relation to two main characteristics of positive psychology, namely virtues and life satisfaction, taking into consideration Big Five personality factors. The literature overview showed that there are still open questions. This thesis contributes to existing literature by considering a broad conceptualization of sense of humor and humor related concepts. The approach of investigating different concepts of sense of humor, in order to cover a set of facets of sense of humor as comprehensively as possible, is new in research about sense of humor and its relations to positive psychology constructs. The three parts of the thesis will clarify the relations between sense of humor, character strengths, virtues, and life satisfaction. It will help to better our understanding of how the dimensions of sense of humor are composed and its contribution to these three concepts of positive psychology. Mainly, the following three major issues in literature have been detected and will be investigated in the three main parts of the thesis:

A) The relationship between sense of humor, character strength and virtues.

The literature overview on Positive Psychology and humor as a character strength showed that first, the assignment of the strengths to the virtues was done on theoretical grounds and still needs empirical verification. Bermann and Ruch (2009 a, b) as well as Ruch and Proyer (2015) showed that humor might not only be assigned to transcendence but also to other virtues (i.e., humanity, justice, wisdom and knowledge). In both studies, the assignment to humanity was preferred.

Second, Edwards and Martin (2014) showed that humor, measured with the VIA-IS scale, is not broad enough to make all-encompassing statements about the relationship to life satisfaction. Study I of this dissertation focuses on the VIA-IS humor scale and different conceptualizations of sense of humor to investigate its relationship to the virtues. The expectation was to find high convergence between humor as a strength, the sense of humor, and the socially warm humorous style of the HBQD. Study I exceeds the existing literature by its broad scope of the measurement of sense of humor used, examining the overlap with humor as a strength, and the assignment to the virtues. Further, the use of correlational data was used instead of ratings from experts or laypersons in order to investigate the assignment of humor to the virtues. It was expected to confirm previous findings that humor might be a good form to express humanity and wisdom and knowledge. For the relations between the HBQD humor styles and the virtues, a relation between wisdom and knowledge and the benign vs. mean-spirited humor was expected. Further, it is expected that mean spirited humor will be correlated with the absence of temperance, humanity and justice. Temperance might also be negatively correlated with earthy vs. repressed. Study I contributes to answer open questions in positive psychology research by investigating the relationship between character strengths, virtues, and a broad scope of sense of humor.

B) *The dimensions of sense of humor.* The literary overview on humor showed that there is still no agreement on the dimensions underlying sense of humor. This thesis makes an effort to close this gap by considering humor conceptualizations and measurement tools, which cover a wide choice of sense of humor facets. Since the HBQD is the most comprehensive measurement for humorous behavior it is taken as a reference scale in all three studies. In study I participants completed the HBQD as a

q-sort, which forced the participants to a normal distribution of the humor statements. In study II and III, participants completed the HBD-rating form. Since problems with the original factor structure proposed by Craik Lampert and Nelson (1996) occurred, the given structure was questioned in Study I and investigated deeply in study II. To reach the most diversity in humor, a broad spectrum of humor questionnaires will be integrated in the findings of the HBQD in all three parts of the thesis.

Further, literature on humor research showed that peer-report studies in humor research are rare. However, as described before, the term humor is not easy to grasp (not only by researchers but also by lay persons) and it is a highly socially desirable characteristic. Therefore, it is all the more important to study peer-reported humor as well. Only by comparing self- and peer-reported humor, can clear statements about the structure and the dimensions of humor and about the relationship to life satisfaction be possible. Ruch, Proyer, Esser and Mitrache (2011) already showed that the congruence between the one who produces humor and the target of the humor is not always given. Therefore, Study II and Study III consider peer-reported humor and life satisfaction as well, in order to make an effort to close this gap. Study II explores the question of humor facets and the convergence of different humor questionnaires, investigating the all-encompassing statements of humorous behavior. Based on earlier studies, it was expected that the bipolarity of the factors would not be replicated, since studies investigating the HBQD reported problems with the bipolarity. Further, since some of the styles are highly intercorrelated, it was expected, that reflective and benign humor do load on the same factor, as well as that competent and socially warm humor will be integrated in one joint factor. For the comparison of the self- and peer-rated humor dimensions it was expected that the structure of self- and peer-rated humorous behavior was convergent. Further, it was expected that the humor

conceptualizations would be well located in the derived factors of the HBQD statements. The findings will bring humor research one step further by answering the question about the dimensionality of sense of humor. Study II contributes to existing humor literature by examining the dimensionality of sense of humor with a broad scope of humor measurement. If all humor conceptualizations are well located in the HBQD factors, one might assume that these cover the whole scope of facets of sense of humor.

C) Sense of humor and its relation to life satisfaction. Until present, a complete investigation between all facets of humor and life satisfaction is missing in research. For study III, the factor scores of the dimensions elaborated in study II, as well as further common sense of humor facets and humor related concepts, were related to life satisfaction. Study III tries to complete the picture by incorporating the entire range of sense of humor facets into the matter of life satisfaction. However, since research has shown that humor is closely linked to personality, it is also important to investigate the relation considering personality as well. It was expected, that the incremental validity for sense of humor in terms of life satisfaction over and above personality would be low. Until present no study exists that investigates the relationship, bearing in mind all sense of humor facets possible, humor related constructs, peer-reported humor and the influence of all Big Five personality dimensions in one study. Bringing all these factors together in one study has the advantage of rendering more comparable results since the conditions of data collections are the same for all measurement tools.

This thesis comprises a general introduction, and three parts describing studies that were conducted to investigate the relationship between humor in all its facets and themes of the positive psychology, namely virtues and life satisfaction. Finally, a

general discussion builds the bridge between the outcomes of the three studies and makes implications for further research.

The general introduction describes the current status of research on humor in general. Existing conceptualizations and humor measurements are described. Further, the theoretical background of character strengths and their assignment to the six virtues in the Values in Action (VIA) classification of strength and life satisfaction as the main outcome of positive psychology are described. A special focus lies on humor as one of the 24 strengths of the classification and its relation to life satisfaction. Finally, the relevance of the thesis and the aims are summarized. Then the three parts of the thesis are presented in detail. The thesis ends with a general discussion of the findings, conclusions and limitations of the three studies and implications for future research.

Approaches to humor

In the following paragraphs humor will be described as a multifaceted phenomenon. First, a brief history of the term humor, and second, the most prominent attempts in humor research to grasp the term will be described. Finally, new approaches in humor research are presented.

The term humor has a long history. It has its origin from the Latin term “*umor*” which means moist or humid. Later, Galen described the human’s temperament by the body liquids called *humores*. He postulated, that emotional health was determined by operative liquids in the body, which expressed choleric, melancholic, phlegm, or sanguine temperament. The *humores* stood for blood, black and yellow gall, and phlegm. One’s composition of the four body liquids determined the physiognomy or, for example, the vulnerability to infections. Later, in the middle ages, the term humor became synonymous for mood, not only positive but also negative mood. Not till the late 16th century did humor become a part of the comic. Humor and wit and the ability to make others laugh were seen as a talent. At the end of the 17th century the meaning of humor changed again, from an ability to a virtue. The assignment to the virtues changed from time to time. It was even seen as the opposite of humanity, since with laughter the monastic silence was broken, which at the time was a cardinal virtue (Le Goff, 1997). In the 16th and 17th centuries the attitude to humor was negatively coined. In the 18th century the humanists began to see humor as a cardinal virtue. It was seen as a benevolent form of laughter and a good opportunity to face criticism and mockery by others (Schmidt-Hidding, 1963). Until today, philosophers see humor as a virtue or a way to reach one. Roberts (1988) describes humor as a way to reach humanity by not taking oneself too seriously and

important. Wisdom can be reached with humor by handing out advice in a humorous way.

Nowadays humor still plays a prominent role in our lives. Having a sense of humor is a highly desirable trait (Martin, 2007). Not only lay persons but also researchers have been making claims about the benefits of humor for centuries (Martin, 2007). Humor has become of increased interest in research because having a greater sense of humor is associated with coping better with stress, better mental and physical health, and with a better intercourse in social settings (Lefcourt, 2001; Martin, 2007). As mentioned before, the meaning of the term always changed through history. Therefore, until present, the term humor has not been easy to grasp. Indeed, there is no agreement on the definition or the number of dimensions underlying humor (Martin, 2007; Ruch, 2004, 2008). As Craik and Ware (2007) state, the phenomenon of humor is very complex and multi-faceted and hence too broad for any one existing theoretical framework. Furthermore, it is much easier to recognize it than to define it. Different researchers define it from different perspectives: for some, humor is the ability to make others smile or laugh, while others define it as a composed and cheerful view on adversity that allows one to see its light side. In the past, humor was treated in many different ways. For some it was seen as a temperament, others defined it as a worldview or an aesthetic perception. Humor can also be seen as an ability or attitude. For this reason numerous tests were designed for its measurement (see Ruch, 2007). Through history two major terminological systems were established. The first terminological system considers humor as benevolent and as a world-view, roughly the tendency to smile in the face of adversity (as opposed to other manifestations of *the comic*, such as wit, mockery or fun; Schmidt-Hidding, 1963). In the second major terminological system, humor is seen as an umbrella term

for everything that is funny. This means, it includes not only neutral and positive humor, as in the first terminological system. Humor as an umbrella term also includes negative forms of humor such as cynicism or sarcasm. These two different terminological systems will be described in the following paragraphs.

This first use of humor is a historical one, where humor is treated as a part of the comic. It derived from the field of the aesthetics, where the funny is one out of several other aesthetic qualities such as beauty or harmony (Ruch, 2002). Humor, in this sense, is only one part of the funny, whereby other elements are wit, fun, nonsense and satire. The funny is defined as being able to make someone laugh or to amuse others (Ruch, 2002). In this sense, humor is meant as an attitude to face the adversity of life with a smile or amusement. It is the gift of looking at the difficulties of life with a good portion of serenity. It is a cognitive-affective style of dealing with situations and life in general. This understanding of humor still exists in some cultures and is even cultivated in respective scientific literature. This understanding of humor had influenced many psychologists, including Freud, Maslow and Allport. Nonetheless, when experimental psychologists rediscovered humor research, they did not pay much regard to this understanding of humor (Goldstein & McGhee, 1972), even though the belief that humor has positive effects on psychological and physiological health might refer to this understanding of humor.

The term humor was later used both by laypersons and (primary) Anglo-American researchers and it has therefore lost this narrow focus and became a broad umbrella term for all kinds of the funny (Martin, 2003; Ruch, 2007). It replaced humor in its narrow sense since this second use of humor is almost incompatible to the foregoing. This is a multidimensional view of humor and it involves all phenomena of the funny. From this perspective, humor is seen as an umbrella term for

all phenomena that make people laugh, for all dispositions to humorous behavior and experience. In this understanding, humor is treated as a neutral concept, whereby it includes positive, negative and neutral humorous phenomena. It is important to note that this definition includes not only positive facets of humor but also negative ones are embedded, since the first terminology includes positive humor only. In this thesis humor is treated as a neutral concept, as an umbrella term for all kind of the funny. This broad and multi-faceted construct refers to characteristics of a stimulus, to mental processes, or to the responses of the individual. Humor in this sense involves cognitive and emotional elements. Further, it may be a state or a trait (Martin, 2003). These various facets of humor make it hard to find a consensus about the definition. Until present, there is no agreement about the definition of humor among researchers.

Consequently, when humor is seen as a catch-all term for the phenomena of this field, it involves humor and sense of humor. These two terms will be described in the following paragraphs.

Humor and sense of humor. As already mentioned no consensus exists about the definition of humor in research. Therefore, the discrimination between the terms humor and sense of humor is not always clear. Humor includes all phenomena in the field of the funny. It may refer to a characteristic of a stimulus, or to the responses of the individual, but also involves cognitive and emotional elements. It can even be an interpersonal phenomenon, or, where no social interaction is needed, a purely intrapsychic phenomenon. Finally humor can be a state or a trait. In contemporary psychology sense of humor refers to the latter (Martin, 2003). Sense of humor is treated as one of many specific phenomena of humor, as a personality trait. However, one has to bear in mind that the sense of humor is still more of a folk-concept (Ruch, 2007). Craik et al. (1996) showed that sense of humor only covers socially warm and

competent humor styles and not all of the existing humorous conduct. Sense of humor as a personality trait in research is a multidimensional construct and contains more than only the socially warm and competent humor styles (Ruch & Hofmann, 2012). In the following paragraph, the meaning of humor as a personality trait will be described. For a better understanding, personality and the term personality trait will first be elaborated, and in a second step sense of humor will be embedded in personality.

Sense of humor and personality. Personality describes how an individual perceives, feels, and thinks (Magnavita, 2002). A personality trait is a hypothetical construct that describes the way people differ from each other. Traits enable us to predict how an individual will behave in various situations, since they are consistent across situations even though they can be influenced by them. Personality psychologists view a trait as a dimension along which people can be placed. To identify the various traits that account for differences among people, they create measures for quantifying these traits, to explore the relationship among different traits and to predict behavior (Martin, 2007).

In personality research the *Big Five* personality dimensions have become the most prominent model of describing the structure of personality traits (see Goldberg, 1990, 1993; John, 1990; Mendiburo-Seguel, Paez & Martinez-Sanchez, 2015). These factors are typically labeled *extraversion* or *surgency* (e.g., talkative, assertive, energetic), *agreeableness* (e.g., good-natured, cooperative, trustful), *conscientiousness* (e.g., orderly, responsible, dependable), *emotional stability vs. neuroticism* (e.g., calm. not neurotic, not easily upset), and *intellect* or *openness* (e.g., intellectual, imaginative, independent-minded). There is not a sole theoretical perspective that brought up the Big Five personality dimensions. Indeed there are two

different approaches in research; the Five Factor Model (FFM) and the Big Five. They both end up with the five dimensions described above. While the FFM dimensions emerged through a questionnaire approach (McCrae & Costa, 1985, 2013), the Big Five were derived from a lexical approach mainly associated with Allport and Odbert (1936). In this thesis the label Big Five is used interchangeably for both approaches as it is often done in research.

The Big Five dimensions are generalized reliably across languages and cultures (John & Srivastava, 1999). There are several instruments that measure the Big Five personality dimensions (e.g., *Neuroticism, Extraversion, Openness for experience Personality Inventory-Revised*; NEO-PI-R, Costa & McCrae, 1992; *Big Five Inventory*; BFI, John, Donahue, & Kentle, 1991).

For assessing personality, the BFI-44 (John, et al., 1991) was used in its German version in this thesis (Lang, Lüdke, & Asendorpf, 2001). It is a 44-item self-report questionnaire with a five-point answer format for the assessment of the Big Five personality traits. The BFI is widely used in research and has good psychometric properties. Cronbach's alpha coefficients for the present sample ranged from .73 (*agreeableness*) to .89 (*extraversion*) with a median of .80.

In this thesis the main focus lies on humor as a personality trait (i.e., sense of humor). As previously noted a personality trait is a hypothetical construct and therefore the sense of humor cannot be observed directly. It has to be derived through indicators (Ruch & Hofmann, 2012). Sense of humor as a personality trait implies that 1) humor within a person is stable across time and situations, although it may vary a bit. 2) Individual differences in humor are measurable and associated with other relevant characteristics. However, to reach a broad scope of humor, sense of humor is

supplemented by further conceptualizations, namely humor appreciation, humor production, and other humor related phenomena.

The study of humor as a personality trait has become one of the most investigated areas in humor research. However, sense of humor is not the only expression that may be used to explain the phenomena. “Trait humor” or “humor styles” are often used similarly to sense of humor (Ruch & Hofmann, 2012). To state how sense of humor is associated with other personality dimensions and to predict relevant behavior, researchers have developed a number of tests for measuring different aspects of humor. Martin (2003) states that humor seems to not be a unitary trait. It is seen as a group of traits and abilities having to do with different components and functions of humor. While some of them are related to each other, others might be quite distinct. All this makes humor difficult to grasp and it is only logical that a number of tests were developed measuring different aspects of humor. In the following paragraphs some of the most relevant measurement tools will be described.

Concepts and measurement approaches of sense of humor. Researchers usually consider humor as an umbrella term. Since humor under this aspect is defined in various ways and humor is not seen as a unitary trait it is not surprising that there is a lack of agreement about the definition and dimensions of this term. And therefore, it is difficult to compare findings. Often the assessment leaves it to the respondents to ascertain their understanding of a sense of humor; for instance, they have to decide on their own what is meant by “I have a good sense of humor” (Ruch, 2007).

Since many theories about humor and sense of humor exist, as many conceptualizations and measurement tools exist as well. Humor appreciation tests use funniness ratings of jokes and cartoons; if sense of humor is measured as an ability to produce or create humor, a performance test is needed; if sense of humor is seen as a

habitual behavior pattern it may be measured with self-report scales in which respondents rate the degree to which various statements describe typical humor-related behavior (Martin, 2007). Ruch (1996) determines that “there has been a renaissance of research interest in the “sense of humor” in recent years, partly as an attempt to define the concept but more strenuously to provide instruments for its measurement” (p. 239). Over 60 different scales to measure humor, sense of humor, humor appreciation and humor production do exist. Ruch (2007) gives an overview over the measurement tools. While most of them disappeared with time, some few did establish themselves and have become important scales for humor research. The following paragraphs give an overview over the most important research approaches, which are used in this thesis. Table 1 summarizes the measurement tools used in this thesis

Table 1

Overview over the Measurement Used in this Thesis

Scales	Dimensions	Measured concept
Temperamental basis of humor		
State-Trait-Cheerfulness Inventory (STCI, Ruch, et al., 1996) ¹	Temperamental basis of humor: Cheerfulness, seriousness, bad mood	Measures not humor itself but the temperamental basis of humor.
Self-report measures of sense of humor		
Sense of humor Scale (SHS, McGhee, 1999)	Three factors as the basis of sense of humor and 6 facets of sense of humor:	Focus on Sense of Humor and it's facets.
	Basis: Playful vs serious attitude, positive vs. negative mood Sense of humor with 6 less basic facets: enjoyment of humor, laughter, verbal humor, finding humor in everyday life, laughing at yourself, humor under stress.	
Humorous behavior Q-Sort deck (HBQD; Craik et al., 1996) ¹	5 dimensions of humorous conduct: Socially warm vs cold, competent vs. Inept, reflective vs, boorish, earthy vs. repressed, benign vs. mean-spirited	Bipolar humor styles; most comprehensive so far.

(Table continues)

(Table 1 continued)

Scales	Dimensions	Measured concept
Humor Styles Questionnaire (HSQ, Martin et al., 2003)	4 humor styles: Affiliative, self-enhancing, self-defeating, aggressive	Focus on humor relevant to psychological well-being.
Comic Styles Questionnaire (developed for part II of this thesis)	8 comic styles: Humor, sarcasm, irony, wit, cynicism, nonsense, fun, and satire	Linguistic approach to humor. Humor as part of the comic.
Humor Production		
Cartoon Punchline Production Test (CPPT, Köhler & Ruch, 1993)	Originality and fluency of humor production.	
Humor Appreciation		
3 Witz Dimensionen Test (3WD, Ruch, 1983)	Funniness and aversiveness of cartoons and jokes of the three categories incongruity-resolution, nonsense, and sexual humor	
Dispositions towards laughter		
PhoPhiKat (Ruch & Proyer, 2009)	3 dispositions towards ridicule and laughter: Gelotophobia, gelotophilia, katagelasticism	

(Table continues)

(Table 1 continued)

Scales	Dimensions	Measured concept
Character strengths		
Values in Action Inventory of Strength (VIA-IS, Peterson & Seligman, 2004)	Measures the 24 character strengths in the VIA Classification of strength: 24 strengths; humor is one out of these strengths	Humor as a character strength, positive and one dimensional,
Personality		
Big Five Inventory (BFI, John, et al., 1991)	Big Five personality dimensions: Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience	
Life satisfaction		
Satisfaction with Life Scale (SWLS, Diener et al., 1985) ¹	Life satisfaction	A global assessment of the cognitive aspect of well-being.

Notes. ¹ = besides self-reports there are also peer-reported data provided for these measures.

Measurement of the temperamental basis of humor. To explain the inter- and intraindividual differences in humor, Ruch, Köhler, and van Thriel, (1996) introduced the state-trait model of cheerfulness, seriousness, and bad mood which builds the temperamental basis of humor. The model assumes that the disposition for humor varies not only intra- but also interpersonally. The concepts consider states and traits, which allows, not only the study of habitual, but also of actual dispositions. The authors acknowledge that even though the expression of humor varies over time and may also be specific to a culture, they also suppose that there is an affective and mental basis of humor that will be universal.

In this approach the underlying mental state and affective basis are the focal points. A temperament describes a disposition to a specific emotion. The model has its root in the study of the emotional responses to humor, where the emotion of exhilaration refers to amusement, hilarity, or mirth and most often occurs in responses to humorous stimuli. Thus, the model explains why some persons are accessible to humorous stimuli and some are not. However, it does not explain for what kind of humor the person is accessible. The model will be described in the following paragraph.

The state-trait model of cheerfulness, seriousness, and bad mood. The Big Five dimension extraversion subsumes *cheerfulness* as an enduring disposition. A cheerful mood represents a state of enhanced preparedness to respond to an appropriate stimulus with smiling and laughter (Ruch et al., 1996). Examining a disposition for humorous behavior they considered, that not only cheerfulness, but also the antagonistic factors, which impair the induction of smiling and laughter, to be important (i.e., a serious frame of mind and a prevalent bad mood). The three

concepts cheerfulness, seriousness, and bad mood build the basis of exhilaratability. In the model these three concepts are considered as states and as traits. Cheerfulness as the state mood and as personality trait lowers the threshold for releasing exhilaration. The authors defined five facets: a prevalence of cheerful mood (CH1), a low threshold for smiling and laughter (CH2), a composed view of adverse life circumstances (CH3), a broad range of active elicitors of cheerfulness and smiling/laughter (CH4), and a generally cheerful interaction style (CH5).

Seriousness and bad mood raise the threshold for releasing exhilaration. The facets for seriousness are defined as follows: the prevalence of serious states (SE1), a perception of even everyday happenings as important and considering them thoroughly and intensively (SE2), the tendency to plan ahead and set long-range goals (SE3), the tendency to prefer activities for which concrete, rational reasons can be produced (SE4), the preference for a sober, object-oriented communication style (SE5), and a “humorless” attitude about cheerfulness-related behavior, roles, persons, stimuli, situations and actions (SE6). Bad mood is basically composed of the three mood states, bad mood (BM1), sadness (BM2), and ill-humoredness (BM4). and their respective behaviors. The facets BM3 and BM5 related to the sad and ill-humored individual’s behavior in cheerfulness evoking situations, and their attitude toward such situations and objects, persons, and roles involved (Ruch, et al., 1996). Figure 1 gives an overview of the state-trait model of exhilaratability.

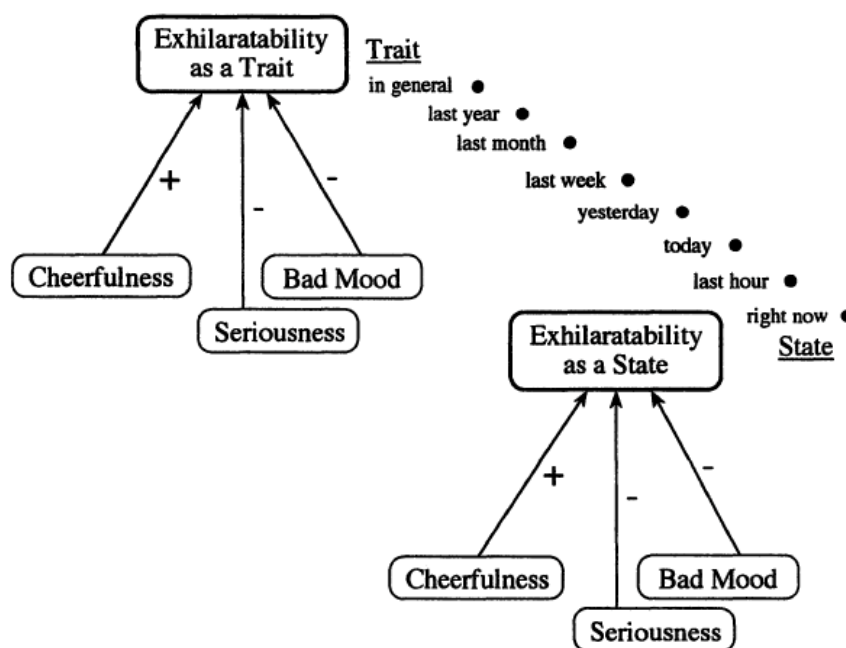


Figure 1. The state-trait model of exhilaratability (Ruch et al., 1996).

Ruch et al. (1996, 1997) developed the State-Trait-Cheerfulness Inventory (STCI) to measure the temperamental base of humor not only for measuring traits (STCI-T) but also states (STCI-S). The items were generated regarding the facets of each construct. For assessing the traits, a standard form with 60 items (STCI-T<60>), a short form (STCI-T<30>), and a long form (STCI-T<106>) exist. The long form was developed for a valid assessment of the facets, the standard and short versions are not considered for scoring facets. For the states a standard and a short form were developed (STCI-S<30>; STCI-S<15>). All forms proved to be valid and reliable instruments for measuring not only self- but also peer-reported cheerfulness, seriousness, and bad mood. In this thesis an economic and reliable assessment of the three concepts was needed. For this reason, the short form of the trait version was used in in part II and III of this dissertation in both self- and peer-reports. It is a 30-item questionnaire (10 items per scale) with a four-point answer format (1 = “strongly disagree” to 4 = “strongly agree”). The short version is a reliable instrument; alpha-

coefficients are about .89 (cheerfulness), .76 (seriousness), and .90 (bad mood) for both, self- and peer-ratings (Ruch, et al, 1996).

Relations to personality and to humor proved the validity of the model: Cheerfulness is highly correlated to extraversion (.67), openness (.29), and agreeableness (.45), and to low neuroticism (-.43). Seriousness correlates with conscientiousness (.40), and bad mood with high neuroticism (.65) and low extraversion (-.58; Carretero-Dios, Benitez, Delgado-Rico, Ruch & Lopez-Benitez, 2014; Ruch & Köhler, 2007). Studies with humor gave evidence for the assumption that cheerfulness, seriousness, and bad mood build the temperamental basis of humor. The three concepts are able to predict most of the humor facets (for an overview see Ruch & Hofmann, 2012).

The state-trait model of cheerfulness, seriousness, and bad mood measures the temperamental basis of humor and not humor itself. However, not only the temperamental basis of humor but also sense of humor has long been a topic of interest to personality psychologists. It is known that humor is not an isolated phenomenon, but rather a node in a net of personality traits (Köhler & Ruch, 1996). It is assumed that humor is not unique to particular personalities, but individuals rather express humor in their daily lives in ways that reflect their broader personality traits (Schermer, Martin, Martin, Lynskey, & Vernon, 2013).

Measurement of humor appreciation. Prior to the 1980s most of the research in sense of humor was based on humor appreciation tests. Sense of humor in this approach is defined by the degree to which an individual enjoys categories of humor. Participants are presented with a series of jokes, cartoons, and other humorous material, and are asked to rate them on funniness, enjoyment, and aversiveness. Most of these tests did not satisfy performance criteria (Ruch, 1992).

The 3 Witz-Dimensionen Humor Test (3WD). Developing the 3 Witz-Dimensionen Humor Test (3WD) Ruch, (1983, 1992) succeed to create a reliable and valid test of humor appreciation. The 3WD survived over the years and remains in use in current research. The author subjected jokes and cartoons to a factor analysis. To ensure a comprehensive representation of humor categories, he began with a set of 600 jokes and cartoons. Some of the material was taken randomly from magazines and joke books; others were selected as representative of humor literature. Several factor analytic studies were conducted using part of these stimuli. These factor-analytic studies revealed three stable and robust factors: incongruity-resolution, nonsense, and sexual humor. While the first two categories relate to the cognitive process, the third is a content category. Content does not play any role in the first two categories. This means a sex-cartoon can also be allocated to one of the first two categories. The author empirically determined that the response to a joke is not one-dimensional. A joke can trigger amusement as well as indignation. Therefore, the 3WD not only measures the funniness of a joke, but also the aversiveness of jokes and cartoons. The funniness rating ranges from “not at all funny = 0” to “very funny = 6” and the aversiveness scale ranges between “not at all aversive = 0” to “very aversive = 6”. In total, six scores can be computed: Funniness and aversiveness for each of the three categories, incongruity-resolution, nonsense and sexual humor (i.e., INC-RESf and INC-RESa, NONf and NONa, and SEXf and SEXa) Ruch (1992) show that the reliabilities are satisfying for the scales of the 3 WD. The internal consistency for the six scores range from .68 to .95, (see, Ruch, 2002). Ruch (1992) found relations between appreciation of certain humor categories and personality. Conservative persons find incongruity-resolution humor funnier than liberal people. Individuals who like incongruity-resolution structured jokes have a need for forms of stimulations

that are structured and clear, whereas those who appreciate the nonsense structure in humor prefer unpredictable and unstructured stimuli (Ruch, 1992).

Humor appreciation tests measure only a small part of humor that people encounter in their daily lives. This approach is limited to people's enjoyment of canned jokes and cartoons. It does not include the tendency to create humor and to amuse others in their lives. The fact that an individual rates jokes and cartoons as funny does not mean that he or she engages in humor in daily life. For this reason, researchers began to develop self-report measures of sense of humor in order to broaden the measured humor spectrum and to investigate other humor-related individual differences in sense of humor (Martin, 2007).

Self-report measures of sense of humor. As an alternative to the humor appreciation tests a number of self-rating tests were later developed, measuring the different facets of sense of humor. Self-report measures appeared to be a more valid approach for assessing certain aspects of sense of humor, since studies found no relation between an individual's score on humor appreciation test and self-ratings (Babad, 1974, Köhler & Ruch, 1996). While in the 1980's humor was treated as an unidimensional construct, more recently the multidimensional nature has been acknowledged (Craig & Ware, 2007; Martin, Puhlik-Doris, Larsen, Gray & Weir, 2003; Ruch, 1996, 2007). This multidimensional view of humor is associated with the conceptualization where humor is treated as an umbrella term, thus involving all phenomena of the funny. In this understanding, humor is treated as a neutral concept, whereby it includes positive, negative and neutral humorous phenomena.

The most influential questionnaires for empirical humor research will be described in the following paragraph and they are also those used in this dissertation.

The Sense of Humor Scale (SHS). McGhee's (1999) approach builds on the idea that humor is a form of play, namely the play with ideas. Therefore, a playful mind builds the basis for understanding humorous stimuli. A potentially funny event may be perceived as annoying or frightening but not as funny if this playful mind is missing. McGhee adopts a multi-faceted concept of sense of humor based on this idea. This model is not only of theoretical but also of practical interest. McGhee intended to develop an 8-step program to train sense of humor. This model builds the basis for humor training. In the initial model McGhee introduced eight components of sense of humor, namely *enjoyment of humor, seriousness and negative mood, playfulness and positive mood, laughter, verbal humor, finding humor in everyday life, laughing at yourself, and humor under stress*. McGhee (1996) introduced a rationally constructed scale to measure these aspects (Sense of Humor Scale, SHS). Using the SHS in a factor analysis the data suggested three factors, but not those implied by McGhee in the original model (Ruch & Carrell, 1998). The six components were found to form a factor that is separate from *good vs. bad mood* and *seriousness vs. playful attitude*. McGhee (1999) adapted the initial SHS considering the findings of Ruch and Carrell (1998) and presented a new scoring scheme with three factors, i.e., playful vs. serious attitude, positive vs. negative mood, and sense of humor which is composed of six less basic components (facets) or humor skills. McGhee supposed that these facets are hierarchically organized (from *enjoyment of humor* to *finding humor under stress*). Those facets low in the hierarchy should be easier to develop and those higher in the hierarchy are assumed to be more difficult. Additionally, a total score can be computed using all items of the SHS.

The SHS consists of 40 items (*playful vs. serious attitude*: eight items, *positive vs. negative mood*: eight items, and *sense of humor*: 24 items; the six facets of sense

of humor with four items each) measured with a 7-point answer format (1 = *strongly disagree* to 7 = *strongly agree*). The alpha coefficients are good for the three main scales ($\alpha = .74$ playful vs. serious attitude, .84 for positive vs. negative mood, .90 for sense of humor, and .90 for the total score). However, since the six facets only consist of four items each, the consistencies are low and therefore should not be calculated. The German version of the SHS (Proyer, Ruch, & Müller, 2010) was used in study I of this dissertation.

Sense of humor measured with the SHS and the temperamental basis of humor overlap well, despite their different theoretical background. Trait cheerfulness is related to the six facets of sense of humor, and positive mood. Trait seriousness is related to seriousness vs. playful attitude, and trait bad mood is related to negative mood (Ruch & Carrell, 1998).

McGhee (1999) developed the SHS in order to monitor the effects of the 7 humor habits program, for strengthening key humor habits and skills, the six facets of sense of humor plus a playful attitude. Each of the facets of the SHS builds one of the steps in which he described how these facets could be trained. This was the first humor training built on theoretical ground. Studies applying the humor training proved the effectiveness of the training and the assumption that humor is trainable (for an overview, see Ruch & McGhee, 2014).

The Humor Styles Questionnaire (HSQ). Humor researchers began to focus their interest toward everyday functions of humor, including coping with stress, mental and physical health. However, most of the humor scales were based on the assumption that a sense of humor is beneficial to health and well-being (Martin, 2007). However, some studies proved that humor doesn't seem to be used only in a beneficial manner (Kuiper & Martin, 2007). Self-report measures of humor do not

differentiate between humor that might be potentially adaptive and humor that might be noxious to well-being (Martin, et. al., 2003). For this reason, they developed the *Humor Styles Questionnaire* (HSQ; Martin, et al., 2003). This self-report measure was developed to assess not only the potentially beneficial but also detrimental humor styles. The HSQ is currently one of the most widely used instruments in humor research. The authors developed a four-dimensional model of humor, whereby the four dimensions relate to different uses or functions of humor in everyday life. Two of them were considered to be conducive to psychosocial well-being (*affiliative humor*, *self-enhancing humor*) and the other two were potentially deleterious to well-being (*aggressive humor*, *self-defeating humor*). In developing the HSQ the authors examined past theoretical and clinical literature on the relation between humor and well-being. They were searching for various functions, forms, or styles of humor that had been described as adaptive and beneficial versus maladaptive and detrimental to well-being. Due to the lack of well-defined theories they developed a 2 x 2 conceptualization of everyday functions of humor. The authors believe that this model captures most of the elements that they found in the literature.

The model distinguishes between humor that is used to enhance the self or to enhance one's relationships with others. The first refers to humor as a method of coping with stress, humor as a defense mechanism, or a courage mechanism. The latter refers to interpersonal humor. It reduces conflicts and strengthens relationships between individuals, and increases one's attractiveness to the other (for more details see Martin et al., 2003).

The second distinction is between humor that is relatively benign and benevolent, and humor that is potentially detrimental or injurious. Humor may be used to enhance the self in a way that is benevolent (i.e., self-enhancing humor) but

also in a manner that is potentially detrimental (i.e., self-defeating humor).

Correspondingly, humor may be used to enhance one's relationships with others in a benign way (i.e., affiliative humor) or it may be done at the expense and detriment of others (i.e., aggressive humor).

For the development of the HSQ the authors employed a construct-based scale construction. They developed specific definitions for these four dimensions. Then they generated a pool of 111 items, sampling as many aspects of each dimension as possible. After several steps, in which subjects had to rate their agreement with the items, they ended up with a pool of 32 items, 8 per scale. Items were, in a first step, deleted based on standard deviations ($< .1.0$), and corrected item-total correlations ($< .25$). In a second step, items were deleted by purpose of minimizing the intercorrelations among the humor scales and the overlap with social desirability. Even though the authors assumed that the scales would intercorrelate, they aimed at developing items that had a minimal overlap between the scales. The four scales were replicated by principal component analysis.

The final version of the HSQ comprises 32 items (8 items per humor style). It uses a 7-point Likert-scale (from 1 = *totally disagree* through 7 = *totally agree*). The mean of the 8 items of each scale forms the scale score (internal consistencies range from .77 (aggressive humor) to .81 (self-enhancing humor). As the authors assumed, the four styles are intercorrelated: Affiliative humor correlates with self-enhancing humor ($r = .34$) and aggressive humor ($r = .24$); aggressive humor and self-defeating humor correlate with $r = .22$. The authors found males to be more engaged in aggressive humor and self-defeating humor.

The HSQ proved to be a reliable instrument. Several studies proved the assumed relation of the four styles to well-being and mental health. The positive

humor styles for example correlate with well-being, positive emotions, and resiliency (Cann & Collette, 2014). The negative humor styles for example correlate positively with depression (Tucker, et al., 2013) and chronic worrying (Cann & Cann, 2013), and negatively with happiness (Ford, McCreight & Richardson, 2014).

The four styles can also be well located in the Big Five personality dimensions (for an overview see Mendiburo-Seguel et al., (2015). Affiliative humor is related to high extraversion (.47) and openness (.23), self-enhancing humor relates to low neuroticism (-.37), high extraversion (.28), and high openness (.27). Aggressive humor correlates negatively with agreeableness (-.59) and conscientiousness (-.37). Finally, self-defeating humor locates in neuroticism (.35), low agreeableness (-.23), and low conscientiousness (-.34; Martin et al., 2003).

Further, affiliative humor and self-enhancing humor assess constructs that overlap to a high extent with cheerfulness ($r = .65, .55$; respectively). In addition, affiliative humor is related to low seriousness and bad mood (-.31, -.33; respectively), and self-enhancing humor to low bad mood only (-.37). Aggressive and self-defeating humor appear to be independent from cheerfulness. Aggressive humor correlates with seriousness (-.41), and self-defeating humor with bad mood (.28; Martin et al., 2003).

While the authors do not claim that their model is comprehensive, they believe that it captures most of the elements discussed in literature concerning the relation between humor and well-being (for an overview, see Ruch, 2008; Ruch, 2007a). The German version of the HSQ is used in study II and III of this dissertation.

Even though the HSQ is one of the most popular humor questionnaires in research, recent studies by Ruch and Heintz (2013) and Heintz and Ruch (2015) about the HSQ expressed problems with the item content and the validity of the instrument. In the first study (Ruch & Heintz, 2013) showed that the relations between the HSQ

humor styles and well-being did not come from the humor content of the items but rather from the context, which means that even if the term humor was replaced by other terms, the relations with well-being would remain the same. In the second study (Heintz & Ruch, 2015) they tested, in a first step, the construct validity of the scale in a multitrait-multimethod analysis in order to examine the convergence with its conceptualization. Each humor style was compared across its definition, construct, and the HSQ scale to test to what extent the four humor styles can be distinguished from one another. In a second step, they tested how the HSQ represents the definitions and construct descriptions of the humor styles. They showed that the definition of the styles only partly converged with the affiliative and aggressive scale and little with self-enhancing scale. Further, the affiliative and self-enhancing humor styles were hard to distinguish from one another. Especially with the definition of self-enhancing a clear mismatch was found between the definition and the measurement of the style. The self-defeating humor style was the only one that converged well with the indicators. These findings implicate that studies with the HSQ must be interpreted carefully.

The Humorous Behavior Q-Sort Deck (HBQD). While the Martin et al., (2003) intended to measure all health related individual differences in humor, the Humorous Behavior Q-Sort Deck (HBQD) provides a comprehensive summary of humor-related behavior. Craik et al. (1996) described the most heterogeneous and comprehensive set of humor behaviors, and consequently the most differentiated structural model of humor found in any humor instrument to date, through five orthogonal factors (Ruch, et al., 2011). Craik et al. (1996) collected specific forms of everyday humorous conduct from a survey of the theoretical and empirical psychological research literature on humor. Some of these statements refer to

characteristics reflecting theories of Freud (1928) and Allport (1961). Others describe commonly held humor tendencies, such as being sarcastic or to play the clown. A few pick up on the abilities to use and understand humor. And still more get at preferences for certain kinds of humorous material and behavior. Out of this literature survey and observations from everyday life the authors derived a set of 100 non-redundant statements. The HBQD consists of a set of one hundred cards, each with a statement pertaining to some aspect of humorous conduct. The basic procedure for administering the HBQD is for a respondent to sort the one hundred cards into piles from one to nine, with one being least, five being neutral, and nine being most characteristic of self or other. The respondent is further required to sort the cards so that each pile has 5, 8, 12, 16, 18, 16, 12, 8, and 5 cards in it, respectively.

Craik et al. (1996) searched for coherent themes within the statements, whereby a principal component analysis yielded bipolar factors of *socially warm versus cold*, *reflective versus boorish*, *competent versus inept*, *earthy versus repressed* and *benign versus mean-spirited* humor. The socially warm vs. cold humorous style describes benevolent humor on the one pole vs an avoidance regarding cheerful behavior. On its positive end of the dimensions, the reflective versus boorish humorous style reveals a tendency to discern the humorous aspects of persons and everyday occurrences, whereas the negative pole suggests a tendency to be a competitive boor. The competent versus inept factor describes an active wit and the ability to tell jokes effectively, versus the inept pole suggesting an inability to do the same. Earthy humorous style reflects a raucous delight in joking about taboo subjects, whereas repressed humorous style demonstrates an inhibition concerning macabre, sexual and scatological forms of humor. Finally, the benign versus mean-spirited humorous style describes a tendency towards an interest in mentally stimulating yet

innocuous humor versus persons using mean-spirited humor like laughing at others and occasionally making remarks betraying a streak of cruelty. The statements were used to create the Humorous Behavior Q-Sort Deck (HBQD), a self-report instrument using 100 items that can be aggregated to the five bipolar scales. Developing the HBQD in a Q-sort format, the authors intended to reduce the social desirability, which is always an issue in humor research, since the positive facets of sense of humor are a highly desirable characteristic. The Q-Sort technique forces the statements in a normally distributed format; every participant has the same value. This ipsative answer format allows people not to be high (or low) in all scores, since the scores are forced in a normal distribution. This normal distribution of the scores leads to the point that every subject has the same mean and standard deviation. Therefore, the scores allow an intraindividual comparison only, while normative data mean and standard deviation of a sample serve as a reference for interindividual comparisons.

These points might serve as advantages or disadvantages. Since it is the only humor scale that uses an ipsative instead of a normative format it makes findings with other humor scales hard to compare. Further, it is questionable if the normally distributed humorous behavior fit each subject. A person cannot display low (or high) scores for more than one of the styles of humorous behavior. For this reason, the ipsative answering format of the HBQD was abandoned in further research. Kirsh and Kuiper (2003) refined the HBQD to a self-referent measure using a seven point answering scale (1 = *extremely uncharacteristic of me*, 7 = *extremely characteristic of me*) and labeled it Humorous Behavior Deck-Revised (HBD-R). Ruch, Beermann, and Proyer (2009) adapted the answer format for the German version of the HBQD and labeled it HBQ-Rating form.

Out of the five bipolar styles of humorous conduct only four relate to the Big Five personality dimensions. Socially warm vs. cold is highly related to extraversion and agreeableness (.66, .48; respectively). This factor seems to overlap to a large extent with cheerfulness and affiliative humor and self-enhancing humor. Reflective vs. boorish is correlated with openness (.24), competent vs. inept relates to agreeableness (.34), and low neuroticism (-.30). Finally, benign vs. mean-spirited is related to agreeableness (.30), and conscientiousness (.27; Craik & Ware, 2007). Earthy vs. repressed humor was not found to be located in the Big Five personality dimensions.

Research with the HBQD and the HBQ-Rating form revealed problems with the five bipolar scales of humorous behavior. The five dimensions have not been replicated yet. Problems were found in the high intercorrelation between the humor styles (Craik et al., 1996). The socially warm vs. cold humor style was intercorrelated with competent vs. inept ($r = .26$) and benign vs. mean-spirited humor styles ($r = .27$). Competent vs. inept was also intercorrelated with earthy vs. repressed humor style ($r = .26$). The highest (negative) correlation was between earthy vs. repressed and benign vs. mean-spirited humor style ($r = -.36$). The intercorrelations in the peer-ratings of the HBQD were even higher (Ruch, et al., 2011). Reflective vs. boorish was not intercorrelated with other humor styles in the self-ratings. However, it was related with all four other styles in the peer-ratings (socially warm vs. cold $r = .32$, competent vs. inept $r = .28$, earthy vs. repressed; $r = -.37$, and benign vs. mean-spirited $r = .41$). No correlation was found between socially warm vs. repressed and benign vs. mean-spirited. Ruch et al. (2011) also found problems with the congruence between self- and peer-rated HBQD factors. For reflective vs. boorish and benign vs. mean-spirited the correlation was small ($r = .20, .28$). Further, the correlation between peer-rated

benign vs. mean-spirited was higher with earthy vs. repressed in the self-evaluations ($r = -.45$). This means that mean-spirited humor tends to be seen as earthy by the peers and benign humor style is seen as repressed.

Kirsh and Kuiper (2003) used the HBD-R in a normative rating with 60 items only (the ones with the highest loadings in a principal component analysis). They retained seven unipolar factors of humorous behavior (i.e., socially warm and general sense of humor, boorish, inept, conscious, deliberate use of humor, intellectual humor, mean-spirited humor, and socially compensatory humor).

The findings of Kirsh and Kuiper (2003) and Ruch et al. (2011) revealed that there are problems with the replication of the five bipolar factors by Craik et al. (1996). The negative humor styles, earthy and mean-spirited, could be aggregated in one dimension as well as socially warm and competent and socially cold and inept. The 100 statements of humorous behavior are certainly a good basis for investigating humorous behavior in all its facets. However, it is important to investigate the factor structure more deeply including peer-ratings to get a clear picture of the dimensions needed to describe all facets of humorous behavior.

The Comic Styles by Schmidt-Hidding (1963). The comic styles (Schmidt-Hidding, 1963) describe humor from a linguistic approach. Schmidt-Hidding posits a differentiated linguistic model of humor. These humor styles take into account the historical view on humor, in which *humor* is a part of the comic next to other elements like *sarcasm*, *irony*, *wit*, *cynicism*, *nonsense*, *fun*, and *satire* as it is described in the paragraph “humor as a comic style”. He characterizes the eight humor styles by seven qualities, namely the goal, the subject of humor, the actor’s attitude, his behavior towards others, the ideal audience, the method, and the linguistic singularity of the humor style. The inclusion of a linguistic approach in a psychological setting

adds a new perspective to humor research and was therefore assessed in this thesis as well. These descriptions of the eighth comic styles were taken for the item construction of the *Comic Styles Questionnaire* (CSQ), which was assessed in peer-ratings as well. In the first part of the questionnaire, participants have to rank order the eight comic styles in the order of 1 = “*describes me best*” to 8 = “*describes me least*”. In the second part participants have to rate how often they would use each comic style in a typical week (1 = “*never*” to 5 = “*very often*”). The scores of the first and the second part were averaged to a total score. For the peer ratings, the instruction and the answer format for both parts was changed to third person singular (1 = “*describes him/her best*” to 8 = “*describes him/her least*”).

Conclusion. To summarize, studies showed that sense of humor assessed with self-report measurement tools overlap between different conceptualizations. Especially the positive humor facets do overlap to a great extent. Ruch et al. (2011), and Köhler and Ruch (1996) showed that trait cheerfulness proved to be the main predictor of these positive humor facets. Sense of humor, measured with the SHS, socially warm vs. cold humor of the HBQD, and affiliative humor are therefore highly correlated. Further Ruch et al., (2011) found earthy and aggressive humor to be an expression of low seriousness, and bad mood as a predictor of inept and mean-spirited humor. The temperamental model did not predict reflective vs. boorish and self-defeating humor.

When assessing sense of humor with self-reports one has to bear in mind that they generate some problems. 1) Craik et al., (1996) already mentioned the high social desirability. A good sense of humor is among the most desirable qualities in a person. Of course, only the positive facets of humor are among the desirable qualities, while the negative forms are not. When people report that they value a sense of humor, they

are likely imagining humor as purely positive (for an overview see Cann & Matson, 2014). In a study by Kuiper and Leite (2010) participants had to rate the desirable qualities of individuals that are described by the humor styles of the HSQ. The highest desirable qualities were ascribed to persons high on affiliative humor, followed by the self-enhancing, the self-defeating, and the aggressive humor. For undesirable qualities an opposite pattern was found. Cann and Matson (2014) showed that adaptive humor styles of the HSQ were associated with a good sense of humor and were judged as more socially desirable. A good sense of humor does not involve maladaptive humor styles and these were reflecting undesirable behaviors. When assessing sense of humor by self-report measurement one has to be aware that social desirability might influence the results. With the Q-sort measurement of the HBQD Craik et al. (1996) made an effort to reduce this bias. Another possibility might be to include peer-reports, since acquaintances will not be that motivated to give positively biased ratings of the person. Peer ratings might be more accurate descriptions of a target's humor than his or her self-reports. This results in a more valid measure of humor (for more details see Paunonen & O'Neill, 2010). For this reason, peer-ratings of humor are necessary for providing valid statements. However, in humor research, including peer-ratings is very rare.

2) The fact that no agreement exists about the definition of humor makes it hard to develop a valid instrument. The literature overview showed that on the one hand there is a high overlap between different approaches, which point to some agreement about certain facets. On the other hand, some unique facets in the HSQ and HBQD exist, suggesting that there might even be more facets that are presently unknown. 3) The questionnaires themselves brought some problems. The HSQ for example seems to have problems with the item content (Ruch & Heintz, 2013); the

factor structure of HBQD has not been replicated until present. Further, some items seem to be difficult to understand for untrained raters and many items refer to behavior that is not easily accessible to self-observations (Martin, 2007). Even though self-report measurement of humor yielded some problems, it is the most popular way of measuring humor.

Humor as an ability. Some conceptualizations of sense of humor view it as a form of creative ability. In this approach, the ability to create jokes and other humorous productions is viewed as a skill (Martin, 2007). For measuring humor creation several performance tests were developed. For the assessment of humor production, caption-removed cartoons were usually submitted to the participants who were ordered to write new captions (for an overview see O'Quin & Derks, 1997). This assessment has various components, including the fluency (i.e., how many jokes are made), and the production success (i.e., how funny these jokes are). These two components are two separate processes (Moran, Rain, Page-Gould & Mar, 2014). Until present, research has generally indicated only weak relation between humor production and self-report scales (Köhler & Ruch, 1996; Lefcourt & Martin, 1986; Ruch et al., 1996). Between measures of humor production and humor appreciation usually no relation was found (Köhler & Ruch, 1996). Interestingly, Moran et al. (2014) found a negative relation between humor appreciation and successful humor production. That is, the funnier a person was in writing punch lines, the less funny they found the jokes written by others. The fluency was not related to humor appreciation. This negative relation persisted even after taking into account the Big Five personality dimensions. Extraversion even was a negative predictor for humor production success. Humor appreciation was associated with openness, conscientiousness, extraversion, and low neuroticism. Further, fluency was related to

conscientiousness. This study showed the complexity of the relationship between humor appreciation and humor production.

The Cartoon Punch line Production Test (CPPT). The Cartoon Punch line Production Test (CPPT, Köhler & Ruch, 1993) was the first standardized and widely used instrument for measuring humor production. Even though the CPPT does measure humor creation in a simulated setting, the authors assume that the humor style in the invented punch lines reflect the habitual humor style of the creator. In the CPPT participants are asked to create as many funny punch lines for a cartoon as possible. It contains 15 caption-removed cartoons of the three categories incongruity-resolution, nonsense and sexual humor. The funniness, originality, wit and richness of fantasy of the punchlines are then rated by laypersons. This gives a total score for *originality*. Further the total number of punch lines written forms the fluency of humor production. This humor creation test does not measure humor production in real life. However, the authors assume that these are comparable with real life settings. Even though the humor categories used in the 3WD and the CPPT were the same, (i.e., incongruity-resolution, nonsense, and sexual humor) humor appreciation and humor creation were largely independent of each other (Ruch & Köhler, 2007).

Newer concepts and humor-related phenomena. In recent decades, specific forms of humor and the disposition towards ridicule and laughter have been investigated more intensively. Especially the aspects of fearing to be laughed at have attracted growing interest. The so called *gelotophobes* are people who extremely fear being laughed at. They misperceive laughter and humor-related stimuli, feel discomfort when being confronted with laughter, and display high sensitivity toward the laughter of others (Proyer, Wellenzohn, & Ruch, 2014). For gelotophobes, laughter does not entail positive aspects. However, Ruch and Proyer (2009)

discovered that being laughed at is not necessarily negatively connoted with all persons. These people are called *gelotophiles*. Gelotophiles look for situations in which they get laughed at. They feel pleasure in such situations. Gelotophilia is related to the use of Martin et al.'s (2003) self-defeating humor. Self-defeating humor is defined as the use of excessively self-disparaging humor to gain the approval of others by doing or saying funny things at one's own expense. Ruch and Proyer (2009) assume that gelotophiles use self-defeating humor to a certain degree. However, they interpret laughter of others as a sign of their appreciation. They gain joy from their laughter and do not try to put themselves down.

Ruch and Proyer (2009) introduced a third group of people: Persons who enjoy laughing at others (i.e., *katagelasticists*). Katagelasticists might play harmless jokes on others but they also do not hesitate to embarrass others beyond what is culturally accepted. Their behavior entails a somewhat antisocial or rude component.

The PhoPhiKat-45 and the short form PhoPhiKat-30 (Ruch & Proyer, 2009) measure the degree of gelotophobia, gelotophilia and katagelasticism. It is a self-report measurement for the three concepts using a four-point answer scale (from 1 = strongly disagree to 4 = strongly agree). The internal consistencies for the three scales are good for both the long, and the short version (gelotophilia: .88, .82; gelotophobia: .87, .82; katagelasticism: .84, .79, respectively). Gelotophobia is negatively related to gelotophilia ($r = -.43$) and not related to katagelasticism, whereas gelotophilia and katagelasticism are positively related ($r = .50$). While gelotophilia and gelotophobia were unrelated to sex and age, younger people and males were found to score higher in katagelasticism. Both scales proved to be valid and reliable measurement tools for the three concepts (Ruch & Proyer, 2009). The PhoPhiKat-30 was used in study II and III of this dissertation.

Studies showed that the three dispositions towards ridicule and laughter can be localized in the five-factor model of personality (Ruch, Harzer & Proyer, 2013; Durka & Ruch, 2015). Gelotophobes are high in neuroticism and low in extraversion and openness. Gelotophilia relates to high scores in extraversion, low neuroticism and low conscientiousness. Finally, katagelasticists are extraverted and score low in agreeableness and in conscientiousness. The specific forms of humor gelotophobia, gelotophilia and katagelasticism are correlated with older concepts of humor as well. Firstly, we find a scale of self-defeating humor in the HSQ, which has similarities with gelotophilia. However, the two concepts differ as follows. Exaggerated self-defeating humor and trying to get the approval of others, by doing or saying funny things at one's own expense, belong to the category of self-defeating humor. Gelotophiles on the other hand do not necessarily seek the approval of others by putting themselves down. For them, laughter at their own cost is something positive, and they find pleasure in entertaining others (Proyer & Ruch, 2010). Indeed, even though there is an overlap between these concepts, it is rather low. Ruch et al., (2009) showed that gelotophobia was positively related to bad mood and self-defeating humor, and negatively to trait cheerfulness, affiliative, self-enhancing humor, and socially warm, reflective, competent, and benign humor styles. No relation was found between gelotophobia and trait seriousness and aggressive humor. Interestingly, they also showed that gelotophobes were no less able to create humor in the CPPT than gelotophiles and katagelasticists. All three were unrelated to humor creation in the CPPT.

Whereas the concepts of gelotophilia, and katagelasticism represent the dark side of humor and laughter (Proyer et al., 2014), there is also a new approach to humor, which considers the positive aspects. It comes from positive psychology,

where humor is treated as a character strength. The following paragraphs describe humor as a character strength and how it is embedded in the framework of positive psychology. First, positive psychology and the concepts of strengths and virtues are described. Humor as a character strength will be described in a second step.

Humor as a character strength and positive psychology. Positive psychology is the scientific study of what goes right in life (Peterson, 2006). The main focus of psychology usually rests on pathology and on the treatments for psychical illness. It has lost the focus on what goes right in life. Positive psychology readopts this neglected string of psychology by taking things that make life most worth living as subject matter. Positive psychologists criticize that positive features like courage, hope, love and humor have been disregarded in psychology in the past (Seligman & Csikszentmihalyi, 2000). In recent years, positive psychology has gained increasing interest among researchers. Positive psychologists concentrate on conditions and processes that enable human flourishing and optimal functioning (Snyder & Lopez, 2009). Positive psychology is characterized by three central topics: a positive subjective experience, positive individual traits, and positive institutions (e.g., families or workplaces; Peterson, 2006).

Peterson and Seligman (2004) developed a manual of the sanities, the *Values in Action (VIA) Classification of Strengths*. The classification describes traits that facilitate or make a contribution to a good life. In the classification six core virtues (*wisdom and knowledge, courage, humanity, justice, temperance and transcendence*) were postulated to be the core characteristics valued by moral philosophers and religious thinkers. The virtues recur in literature and over time. These virtues are universal and according to Peterson and Seligman (2004) perhaps also grounded in biology through an evolutionary process. Since the virtues are too abstract, Peterson

and Seligman did not intend to measure them. They focused on character strengths, which are defined as the example of a virtue. Peterson and Seligman (2004) saw the character strengths as the psychological ingredients that define the virtue. Several criteria for character strengths were elaborated. Table 2 gives an overview of the criteria.

Table 2

Criteria for a character strength to be included in the VIA classification

(Peterson & Seligman, 2004, pp. 16-28; Park, Peterson, & Seligman, 2004, p. 605)

Number	Description
1	Ubiquity – the strength is widely recognized across cultures.
2	Fulfilling – the strength contributes to individual fulfillment, satisfaction and happiness, broadly construed.
3	Morally valued – the strength is valued in its own right and not for tangible outcomes that it may produce.
4	Does not diminish others – the strength elevates others who witness it, producing admiration, not jealousy.
5	Non-felicitous opposite – the strength has obvious antonyms that are “negative.”
6	Trait-like – the strength is an individual difference with demonstrable generality and stability.
7	Measurable – the strength has been successfully measured by researchers as an individual difference.
8	Distinctiveness – the strength is <i>not</i> redundant (conceptually or empirically) with other character strengths.
9	Paragons – the strength is strikingly embodied in some individuals.
10	Prodigies – the strength is precociously shown by some children or youth.
11	Selective absence – the strength is missing altogether in some individuals.
12	Institutions – the strength is the deliberate target of societal practices and rituals that try to cultivate it.

Note. Criteria 1 and 7 were added by Park, Peterson, and Seligman (2004) to Peterson and Seligman’s (2004) initial list of ten criteria.

Humor is one out of the 24 character strengths in the VIA-Classification of Strength (Peterson & Seligman, 2004). Regarding the criteria that are listed in Table 2

the positive facets of humor fit all of the 12 criteria. Therefore, Peterson and Seligman (2004) included humor to the list of 24 character strengths. Humor in the VIA classification is understood as a morally valued trait, as potentially virtuous and contributing to positive psychological functioning. Like all strengths in the VIA classification, humor is understood as a one-dimensional and unipolar construct. Peterson and Seligman (2004) defined the humorous individual as someone "... who is skilled at laughing and teasing, at bringing smiles to the faces of others, at seeing the light side, and at making (not necessarily telling) jokes" (p. 530). Humor as a strength in the VIA-IS is not only defined by the presence of positive uses of humor. The absence of negative uses is important for humor as a strength as well.

To measure these character strengths, several instruments (e. g. *Values in Action [VIA] Inventory of Strengths [VIA-IS]*, *VIA-Youth*, *VIA-Structured Interview [VIA-SI]*; *VIA-Rising to the Occasion Inventory [VIA-RTO]*) were developed. The most commonly studied instrument is the *Values in Action Inventory of Strengths (VIA-IS)*, a self-report measurement questionnaire comprising 240 items (10 items per strength). It uses a 5-point Likert-scale (from 5 = *very much like me* through 1 = *very much unlike me*). The mean of the 10 items of each scale forms the scale score (internal consistencies > .70). The questionnaire is widely used in research and exists in several languages (e.g. Croatian, English, German, Japanese and Korean), demonstrating good psychometric properties (for an overview, see Peterson & Park, 2004). For investigating the character strengths in German speaking countries, Ruch, Proyer, Harzer, Park, Peterson and Seligman (2010) adapted the VIA-IS into German. Table 3 gives an overview over the six core virtues and the 24 character strengths assigned to these virtues.

*Table 3**Classification of the Six Core Virtues and 24 Character Strengths**(Peterson & Seligman, 2004, pp. 29-30)*

Strength	Description
Virtue 1 – Wisdom and knowledge: Cognitive strengths that entail the acquisition and use of knowledge.	
(1) Creativity	Thinking of novel and productive ways to do things.
(2) Curiosity	Taking an interest in all of ongoing experience.
(3) Open-mindedness:	Thinking things through and examining them from all sides.
(4) Love of learning:	Mastering new skills, topics, and bodies of knowledge.
(5) Perspective:	Being able to provide wise counsel to others.
Virtue II – Courage: emotional strengths that involve the exercise of will to accomplish goals in the face of opposition, external or internal.	
(6) Bravery	Not shrinking from threat, challenge, difficulty, or pain.
(7) Persistence	Finishing what one starts.
(8) Honesty	Speaking the truth and presenting oneself in a genuine way.
(9) Zest	Approaching life with excitement and energy.
Virtue III – Humanity: interpersonal strengths that involve “tending and befriending” others.	
(10) Love	Valuing close relations with others.
(11) Kindness	Doing favors and good deeds for others.
(12) Social intelligence	Being aware of the motives and feelings of self and others.

(Table continues)

(Table 3 continued)

Strength	Description
Virtue IV – Justice: civic strengths that underlie healthy community life.	
(13) Teamwork	Working well as member of a group or team.
(14) Fairness	Treating all people the same according to notions of fairness and justice.
(15) Leadership	Organizing group activities and seeing that they happen.
Virtue V – Temperance: strengths that protect against excess	
(16) Forgiveness	Forgiving those who have done wrong.
(17) Modesty	Letting one's accomplishments speak for themselves.
(18) Prudence	Being careful about one's choices; not saying or doing things that might later be regretted.
(19) Self-regulation	Regulating what one feels and does.
Virtue VI – Transcendence: strengths that forge connections to the larger universe and provide meaning	
(20) Appreciation of beauty and excellence	Noticing and appreciating beauty, excellence, and/or skilled performance in all domains of life
(21) Gratitude	Being aware of and thankful for the good things that happen
(22) Hope	Expecting the best and working to achieve it
(23) Humor	Liking to laugh and joke; bringing smiles to other people
(24) Religiousness	Having coherent beliefs about the higher purpose

Peterson and Seligman (2004) did not specify how their model should be adequately tested. Since the strengths are grouped together to a virtue many researchers tried to verify the structure through a factor analysis. For example, Peterson and Seligman (2004) report results from an exploratory factor analysis that led to a 5-factor solution. The orthogonal rotated factors were labeled 1) *strengths of*

restraints (fairness, modesty, forgiveness, prudence), 2) *intellectual strengths* (creativity, curiosity, love of learning, appreciation of beauty), 3) *interpersonal strength* (kindness, love, leadership, teamwork, humor), 4) *emotional strengths* (bravery, hope, self-regulation, zest), and 5) *theological strengths* (gratitude, religiousness). Ruch, et al. (2010) found a similar factor structure for the German version of the VIA-IS. In factor analytic studies with orthogonal factor rotation researchers usually find four to five factors (e.g., Peterson & Park, 2004; Peterson, Park, Pole, D'Andrea, & Seligman, 2008). Park and Peterson (2006) and Van Eeden, Wissing, Dreyer, Park, and Peterson (2008) conducted oblique factor rotation and found four respectively one factor. However, they used the VIA-Youth for exploring the factors. Considering that a person, for example, must not show both high humor and high religiousness in order to be transcendent, it is obvious that the strengths of a virtue do not have to be intercorrelated and therefore the expected factor structure cannot be found. Peterson and Seligman (2004) also highlighted that an individual may display one or two strengths within a virtue, and that one would rarely display all strengths of a virtue.

While exploring the structure of strengths and virtues, Ruch and Proyer (2015) asked experts and lay persons to rate how good of an example each of the 24 strengths for the six virtues is. The results support the structure suggested by Peterson and Seligman (2004). However, the results also showed that 1) some of the strengths might also be assigned to other virtues, and 2) humor was the only strength that probably fits better to humanity (or wisdom) than to transcendence. This finding supports the results of Beermann and Ruch (2009a, b). They focused only on humor and investigated whether the assignment to transcendence found support with laypersons and experts. In the first study (Beermann & Ruch, 2009a), they examined

the connection between virtue and humor. They took the items of several humor questionnaires. The choice of questionnaires was guided by three criteria: 1) As a comprehensive measure the HBQD was chosen. 2) Several uni- and multidimensional instruments were included to insure the broadest possible variety of humor's manifestation. They included aspects of humor that are identified as positive and/or negative, as well as including laughing at oneself (e.g. HSQ, SHS, STCI-T<60>). 3) The subscale humor of the VIA-IS and the SAWS (Self-Assessed Wisdom Scale, Webster, 2003) were chosen because they assess humor in the context of virtue. Participants were asked to rate the items for their degree of vice or virtue. They showed that virtue and vice are represented in humor. Even though the majority of the humor items were rated as neutral, the items covered the whole spectrum from virtue to vice. The items that were rated as virtuous (73 out of 298) were used in a second study in which experts had to rate the assignment of the humored items to one of the six virtues. Of the ten humor items in the VIA-IS only eight were included in the rating. Participants were informed about the aims of the study. The virtues humanity and wisdom were most frequently represented; temperance had the lowest mean. All of the six virtues were represented to some extent. Several items incorporated more than one virtue. All of the eight VIA-IS humor items were considered at least slightly virtuous (four of them moderately virtuous), representing the virtues humanity, transcendence, and wisdom. The degree of convergence among the experts was high; the convergence between experts and laypersons moderate.

In the second study (Beermann & Ruch, 2009b) participants were asked to tell in how many situations where a person showed a certain virtue, he or she did it in a humorous way. And how often the person himself was able to show the virtue in a humorous way. In a second step, participants had to write down situations in which a

virtue was shown humorously. They were asked to report as many situations as possible for each virtue. The story had to fit some criteria, however only the number was important for the authors, not the story itself.

Again, humanity and wisdom were the two virtues that seemed to be appropriate to employ humor, and again humor can serve the entire six virtues. No difference in the number of the reported situations was found for the virtues. However, benevolent humor styles were used more often. If derisive or skeptical humor was used, it was in justice situations.

All of the three studies (Beermann & Ruch, 2009a, 2009b; Ruch & Proyer, 2015) found that humor can serve all of the six virtues; however, they all identified humor to be appropriate for serving humanity and wisdom. These findings showed that the assignment of humor to the virtues is still not clear and needs further elaboration. The studies described investigated judgments of laypersons and experts on the assignment. This approach helped form a better understanding of the connection between humor and virtue.

Part I of this thesis looks into this gap in research by examining the assignment on the basis of correlations. In the correlational approach the assignment of the self-reported humor is built on the similarity to self-reported strength and virtues. Since the VIA-IS does not assess virtues themselves, no direct measure of virtue was utilized but prototypical character strengths were aggregated to form an index for the six virtues. New consolidated findings can be gained by examining the relationship by adding the perspective of another approach. It was expected to replicate the findings of Beermann and Ruch (2009a, 2009b) and Ruch and Proyer (2015) that humor can serve all of the six virtues, especially humanity and wisdom. Already Peterson and Seligman (2004) discussed that “Humor, for example, might be

considered a strength of humanity because playfulness can create social bonds. It might also be classified as a wisdom strength, inasmuch as humor helps us acquire, perfect, and use knowledge. “ (p. 31).

Schmidt-Hidding (1963) assumed that the appreciation and expression of humor may be affected by virtues. The concept of sense of humor may be shaped by the influence of humanism. People started to distinguish between kind-hearted forms of humor and laughing at others. With this influence of humanism, the sense of humor typically was associated with benevolent forms of humor.

One central outcome of positive psychology: life satisfaction. Positive psychology is interested in the realization of one's potential, pursuing interests, nurturing others and leading an authentic life (Snyder & Lopez, 2009). Its mission is to understand and foster the factors that allow individuals, communities, and societies to flourish (Seligman & Csikszentmihalyi, 2000). An important goal of research in positive psychology is to determine the factors that contribute to individual differences in the fields mentioned above. Subjective well-being subsumes an overall evaluation of one's life. It is operationalized through two components: cognitive and affective evaluation of one's life (Diener, 2000). The affective aspect relates to hedonic balance. That is the relative frequency of positive versus negative emotions. The cognitive aspect includes the subjective evaluation of satisfaction with life. Life satisfaction is defined as a cognitive state of mind, a global judgment of one's life (Diener, 2000). Predictors of life satisfaction, such as social network and personality traits, were studied frequently in the literature. For example, personality traits have been found to be good predictors of well-being and life satisfaction (Diener & Lucas, 1999).

Life satisfaction is usually assessed with the *Satisfaction With Life Scale* (SWLS, Diener, Emmons, Larsen, & Griffin, 1985). It is a widely used and very economic scale to measure self-assessed global life satisfaction with five items only. It uses a 7-point Likert-scale (from 1 = *strongly disagree* through 7 = *strongly agree*). Despite the few items the internal consistency of the scale is very high (Cronbach's $\alpha = .88$). The German version of the SWLS (Ruch et al., 2004) was used in part III of the thesis.

Many studies have been conducted with the VIA-IS, contributing to the knowledge of humor as a strength. Humor is among the highest ranked strengths (Park, Peterson & Seligman, 2006) and is among those yielding the strongest correlations with subjective well-being and life satisfaction (see Park, Peterson & Seligman, 2004; Peterson, Ruch, Beermann, Park & Seligman, 2007; Ruch et al., 2010). Moreover, in people with physical illness humor has been found to lead to higher satisfaction with life (Peterson, Park & Seligman, 2006), and it predicts high scores in the three ways to live the good life (i.e., orientations to happiness; Peterson et al., 2007). Even though these studies show humor might be a good predictor for life satisfaction, it cannot be generalized for all humorous phenomena due to its restriction to only one facet of humor, namely a positive and one-dimensional one. We do know from humor research that sense of humor is a multifaceted phenomenon and the restriction to only one facet might not meet the complexity of humor. Several studies exist examining the relationship between sense of humor and life satisfaction. The following paragraph gives an overview of the research in this field.

Sense of humor and life satisfaction. Why should sense of humor contribute to life satisfaction? One explanation might be the broaden-and-build theory (Frederickson, 2001). It clarifies the mechanism by which humor should contribute to

life satisfaction. It proposes, that positive emotions (which can be generated through humor) serve to build many different kinds of lasting personal resources (intellectual, social and emotional). Positive emotions lead to increased attention to peripheral objects, more flexible and more creative thinking and increased receptiveness to new information and greater bonding with others (Cohn & Fredrickson, 2009). The broaden-and-build theory ascribes an important role for individual growth and social relationships to positive emotions. Positive emotions help build personal and social resources. These skills contribute to more effective functioning in everyday life, generating the kind of feedback that should further contribute to life satisfaction.

In the foregoing paragraph the relationship between humor as a strength and life satisfaction is described. However, not only studies with the VIA-IS but also correlation studies using other humor scales usually find humor to be a good predictor of life satisfaction (Shimai, Otake, Park, Peterson & Seligman, 2006). Studies examining the relationship between humor and life satisfaction usually consider the four humor styles of the HSQ. In these studies, usually individuals with high scores in affiliative and self-enhancing humor, and low scores in self-defeating humor report of increased life satisfaction, while no relation to aggressive humor was found (Dyck & Holzmann, 2013; Edwards & Martin, 2014; Jovanovic, 2011; Ruch & Heintz, 2013). Leist and Müller (2013) and Zhao, Wang and Kong (2014) reported the same findings for the two adaptive styles but not for the self-defeating style, which was unrelated to life satisfaction. Karou-ei, Doosti, Dehshiri and Heidari (2009) found that individuals reporting high scores in aggressive humor showed decreased life satisfaction.

The relation between the four HSQ humor styles and life satisfaction was also examined in a greater context of positive psychology. Maiolino and Kuiper (2014) investigated the humor styles in a positive psychology context, namely savoring and

gratitude. Savoring is defined by enhancing positive experience through various strategies. Gratitude describes the frequency and intensity of how people experience grateful affect. These two concepts were found to be strongly related to positive well-being and life satisfaction. Results showed that self-enhancing humor, self-defeating humor and aggressive humor were able to predict life satisfaction over and above savoring and gratitude.

Studies investigating the role of personality while examining the relation between sense of humor and life satisfaction are rare. Dyck and Holtzmann (2013) showed that high affiliative and self-enhancing and low self-defeating humor still predicted life satisfaction when controlling for neuroticism. Jovanovic (2011) tested whether the humor styles of the HSQ can predict life satisfaction over the two Big Five dimensions extraversion and neuroticism. Results showed that the relationship between extraversion, neuroticism and life satisfaction could be partially explained by self-enhancing humor. This means that highly extraverted persons tend to use self-enhancing humor more, which contribute to greater life satisfaction. The author assumes that the coping humor, which is involved in self-enhancing humor might contribute to greater life satisfaction. The remaining three humor styles did not play any role in the relationship between personality and life satisfaction.

Ruch and Heintz (2013) examined whether the four HSQ styles are able to predict life satisfaction over and above all of the Big Five personality dimensions. Only self-defeating humor remained a significant negative predictor for life satisfaction.

Leist and Müller (2013) regrouped the HSQ humor styles by cluster analysis into a broader constellation. They found three so called humor types: endorsing humor (individuals showed high scores above average across all four humor scales),

refusing to use humor (individuals showed scores below average, especially low self-enhancing humor), and using humor to enhance the self (individuals reported scores below average in aggressive and self-defeating humor, average affiliative humor, and clearly above average of self-enhancing humor). The three humor types differed significantly in amount of life satisfaction, with the “self-enhancers” being the most adaptive, and the “humor deniers” type showing negative relation to life satisfaction. The authors point out that a single humor style might not be considered individually but rather in the context of other humor styles because a single humor style is not detrimental or beneficial itself.

Only a few studies examined the relationship between life satisfaction and other concepts of sense of humor or humor related behavior. Wanzer, Sparks and Frymier (2009) measured coping humor (measured with a single item), and humor orientation (i.e., individual’s predisposition to use humor in social interaction; Booth-Butterfield & Booth-Butterfield, 1991) and their relation to life satisfaction. They found that humor orientated individuals reported greater coping efficacy, which leads to increased life satisfaction. However, coping efficacy includes several forms of coping, not only coping through humor. Only coping efficacy and health status explained unique variance in life satisfaction, while humor orientation did not. Proyer, Ruch and Chen (2012) found a negative association between gelotophobia and life satisfaction.

There are also intervention studies that show that there is a causal relation between humor and life satisfaction. Several studies have found that training humor increases life satisfaction (Hirsch, Junglas, Konradt & Jonitz, 2010; Konradt, Hirsch, Jonitz & Junglas, 2013; Mathieu, 2008; McGhee, 2010). Other studies have found no

significant relationship between humor and life satisfaction (Celso, Ebener & Burkhead, 2003).

To summarize, studies examining how sense of humor contributes to life satisfaction mainly focus on humor as a character strength or the four humor styles of the HSQ. It is obvious that there is some information missing when focusing only on these two concepts of sense of humor. First, humor as a strength covers only a small part of the multifaceted sense of humor. Second, the HSQ styles indeed cover more facets of sense of humor than humor as a strength. The styles comprise adaptive and maladaptive humor. Edwards and Martin (2014) discuss that humor in the VIA-IS and the positive humor styles of the HSQ are conceptually similar. Therefore, the incremental validity of the two positive HSQ humor styles in the prediction of life satisfaction is low. In contrast, the two negative humor styles brought a great increment beyond humor in the VIA-IS when predicting life satisfaction. Therefore, it is important to examine negative facets of sense of humor as well. However, recent studies indicated that the validity of the HSQ might be impaired (Heintz & Ruch, 2015; Ruch & Heintz, 2013). Further, the HSQ styles only cover humor that contributes to physical and psychical health. Not all facets of sense of humor are included in the HSQ styles. To gain a complete picture of the relationship between humor and life satisfaction, it is important to consider the entire range of humor facets. Edwards and Martin (2014) claim that it appears to be important to examine negative as well as positive uses of humor when exploring relationships between humor and life satisfaction.

A few studies (Dyck & Holtzmann, 2013; Jovanovic, 2011; Ruch & Heintz, 2013) examined whether the HSQ humor styles are able to predict life satisfaction over and above personality. These studies showed that it is important to consider all

Big Five personality dimensions when examining the relationship between sense of humor and life satisfaction, because these studies showed that first, only few humor styles are able to predict life satisfaction over and above personality, and second, all of the Big Five personality dimensions are related to humor. If not all of the Big Five dimensions are considered, important information might be missed. This thesis addresses a number of gaps in the current literature on sense of humor and life satisfaction. It first investigates the relationship between life satisfaction and different conceptualizations of sense of humor (not only the HSQ). Second, it considers all Big Five personality dimensions. Third, as mentioned above, peer-ratings are of big importance in (humor) research. Peer-ratings are valuable sources of information. Ready, Clark and Westerhouse (2000) emphasize that they may be used to supplement or even replace self-reports, since peer-reports are more objective and valid. Peer-ratings are of big importance since they can eliminate method bias and effects of social desirability. Park and Judd (1989) found that the self-peer agreement was higher on less social desirable than on more desirable aspects of personality. A good sense of humor is among the most desirable qualities in personality. Of course, only the positive facets of humor are among the desirable qualities, while the negative forms are not. When people report that they value a sense of humor, they are likely imagining humor as purely positive (for an overview see Cann & Matson, 2014). Including peer-reports might help overcome this bias since acquaintances will not be that motivated to make positively biased ratings of the person. Peer ratings might be more accurate descriptions of a target's humor than are his or her self-reports. This results in a more valid measure of humor (for more details see Paunonen & O'Neill, 2010). Until present, none of the studies examining the relation between sense of humor and life satisfaction did consider peer-rated sense of humor and peer-rated life

satisfaction. To close this research gap peer-ratings are included in this thesis in part II and III.

Aims of the thesis

The main aim of the thesis is to draw a complete picture of the dimensions of sense of humor and their relation to character strengths, virtues and life satisfaction. As the taxonomy of the HBQD (Craik et al., 1996) is the most comprehensive model of humor thus far, it is taken as a reference scale for sense of humor. Accordingly, the HBQD is used in each part of the study. In the first part the HBQD was applied as a q-sort, in part II and III as a rating scale for self- and peer-rated humorous behavior.

Part I. The aim of the study in part I was twofold. (1) To examine the relation between humor as a strength measured with the VIA-IS, and the sense of humor measured with the SHS. Further, humor as a strength was located within a factorially comprehensive taxonomy of humor (HBQD). The expectation was to find high convergence between humor as a strength, the sense of humor and the socially warm humorous style of the HBQD. Many studies conducted with the VIA-IS showed the relation of humor as a strength with other variables. This study contributes to a better understanding of what facet of humor is measured in the VIA-IS, which is of big importance for future research in positive psychology.

(2) To investigate the relationship between sense of humor character strengths, and the related virtues measured by the VIA-IS. Earlier studies (Beermann & Ruch, 2009a, 2009b; Proyer & Ruch, 2015) showed that the assignment of humor to transcendence is not necessarily best. Part I of this thesis ties in with these studies and brings the literature on humor and virtues one step further by examining correlational data. It was expected to confirm previous findings that humor might be a good form with which to express humanity and wisdom and knowledge.

For the relations between the HBQD humor styles and the virtues a relation between wisdom and knowledge and the benign vs. mean-spirited humor was

expected. People scoring high on benign humor like humor that is mentally stimulating and harmless. The other pole describes humor that decreases or attacks others. Further it is expected that mean spirited humor will be correlated with the absence of temperance, humanity and justice. The repressed pole of the earthy vs. repressed humor might be related to temperance as well. It describes an inhibition concerning sexual, morbid, or scatological expressions of humor.

Studies that examine the relation between character strength and virtues, especially humor as a strength, and a multifaceted view on sense of humor are rare. Part I of this thesis brings research about sense of humor and its role in the field of positive psychology one step further by considering sense of humor to be a multidimensional phenomenon and therefore taking into account humorous behavior that covers the whole spectrum between vice and virtue. The localization of humor as a strength and the remaining 23 character strengths in this broad concept of sense of humor is a new contribution to the literature. The findings of part I will help ensure a better understanding of sense of humor and its relation to positive psychology.

Part II. The aim of part II of the thesis was threefold: (1) To test in a factor analysis whether the factors yielded from the 100 statements of humorous behavior in the HBQD in this study are equivalent to those in Craik et al. (1996) or those in Kirsh and Kuiper (2003). Craik et al. (1996) found five bipolar factors of humorous behavior (i.e., socially warm vs. cold, reflective vs. boorish, competent vs. inept, earthy vs. repressed, and benign vs. mean-spirited). The findings of Craik et al. could not yet be replicated. Kirsh and Kuiper (2003) subjected only 60 items (the ones with the highest loadings in a principal component analysis) to a factor analysis. They retained seven unipolar factors of humorous behavior (i.e., socially warm and general

sense of humor, boorish, inept, conscious deliberate use of humor, intellectual humor, mean-spirited humor, and socially compensatory humor).

Based on earlier studies it was expected that the bipolarity of the factors would not be replicated since studies investigating the HBQD reported problems with the bipolarity, and Kirsh and Kuiper (2003) did not find any bipolar factor even if they only used the marker items of each pole. Further, since some of the styles are highly intercorrelated, it was expected that *reflective* and *benign humor* load on the same factor, as well as *competent* and *socially warm humor* will be integrated in one joint factor.

(2) To compare the hierarchical emergence of self- and peer-rated factors of the 100 statements of humorous behavior of the HBQD, to see whether self- and peer-rated humorous behaviors share the same underlying dimensions. One common characteristic of previous studies investigating the structure of humor was that they only used self-ratings to describe humor and therefore rely on only one data source. However, to understand the structure of humor fully it is necessary to investigate not only self-ratings but also peer-ratings. The inclusion of self- and peer-ratings in the present study is an important contribution to the literature since the peer-ratings strengthen the validity of the proposed structure of the humor dimensions and helps eliminate a potential method bias. A high convergence would further support the robustness of the structure of the dimensions. It was expected that the structure of self- and peer-rated humorous behavior was convergent since the correlational pattern of self- and peer-rated HBQD data indicate a convergence (Ruch et al. (2011).

(3) To examine the derived factor scores in a multimethodological approach. The present study expands the existing literature by not only investigating the structure but also testing the associations of the factors with existing humor scales and

personality. To test where in the factor space current measures are located, it is necessary to consider several methods (i.e., self-report and performance tests) and different humor concepts. The factor scores of the self- and peer-rated HBQD items were correlated with existing conceptualizations of sense of humor (CSQ; self- and peer-rating, HSQ; self-rating), the temperamental basis of humor (STCI-T<30>; self- and peer-ratings), performance tests (CPPT, 3-WD), the disposition towards laughter (PhoPhiKat) and the Big Five personality dimensions (BFI) to test their overlap. It was expected that the humor conceptualizations are well located in the derived factors of the HBQD statements. The findings will bring humor research one step further by answering the question about the dimensionality of sense of humor. If all humor conceptualizations are well located in the HBQD factors one might assume that these cover the whole scope of facets of sense of humor.

Part III. The aim of part III of the thesis was twofold: (1) testing the association of a comprehensive list of humorous behavior with life satisfaction. This was done for a) self-ratings and b) peer-ratings of both, humorous behavior and life satisfaction. The data from part II of the thesis was re-analyzed. In part II four dimensions were preferred, and good convergence between self- and peer-reports was reported. However, other solutions (i.e., one to six factors extracted in a hierarchical factor analysis) were considered as well. Therefore, in part III the association of life satisfaction with each of the factor scores derived for the one to six factor solutions was tested as well. This complete investigation of the relationship between life satisfaction and all of the derived dimensions from level one to six was conducted in order to gain a more detailed picture and to find the dimension that explains the most variance in life satisfaction. This finding is of big importance because it will help better the understanding of the relation between sense of humor and life satisfaction.

It will show whether a more basal differentiation of sense of humor facets (lower levels) or a subtler graduation explains more variance in life satisfaction.

(2) The association of a) three dispositions towards ridicule and being laughed at (i.e., gelotophobia, gelotophilia, and katagelasticism); b) the temperamental basis of the sense of humor (i.e., cheerfulness, seriousness, and bad mood); and c) four different humor styles (i.e., affiliative, self-enhancing, self-defeating, and aggressive humor) and both self- and peer-rated life satisfaction was tested. The influence of personality was controlled to examine whether sense of humor predicts variance in life satisfaction independent from the Big Five personality dimensions.

Literature showed that the humor styles of the HSQ and gelotophobia are related to life satisfaction. Since recent studies indicated that the validity of the HSQ might be impaired (Heintz & Ruch, 2015; Ruch & Heintz, 2013) it is important to consider further facets of sense of humor as well. Further, there is a big gap in research concerning the relation between facets of sense of humor that go beyond the HSQ and gelotophobia and life satisfaction. This study makes an effort to close this gap by examining a broader scope of humor related conceptualizations. To gain a complete picture of the relationship between humor and life satisfaction, it is important to consider the entire range of humor facets. The negative facets are as important as the positive ones (Edwards & Martin, 2014).

References general introduction

- Allport, G. W. (1961). *Pattern and growth in personality*. New York, NY: Holt, Rinehart & Winston.
- Allport, G. W., & Odbert, H. S. (1936). Trait-names: A psycho-lexical study. *Psychological monographs*, 47, i.- 171. doi:10.1037/h0093360
- Beermann, U., & Ruch, W. (2009a). How virtuous is humor? What we can learn from current instruments. *The Journal of Positive Psychology*, 4, 528-539. doi:10.1080/17439760903262859
- Beermann, U., & Ruch, W. (2009b). How virtuous is humor? Evidence from everyday behavior. *Humor: International Journal of Humor Research*, 4, 395-417. doi:10.1515/HUMR.2009.023
- Booth-Butterfield, S., & Booth-Butterfield, M. (1991). Individual differences in the communication of humorous messages. *Southern Journal of Communication*, 56, 205-218. doi:10.1080/10417949109372831
- Cann, A., & Cann, A. T. (2013). Humor styles, risk perceptions, and risky behavioral choices in college students. *Humor, International Journal of Humor Research*, 26, 595-608. doi:10.1515/humor-2013-0033
- Cann, A., & Collette, C. (2014). Sense of Humor, Stable Affect, and Psychological Well-Being. *Europe's Journal of Psychology*, 10, 464. doi:10.5964/ejop.v10i3.746
- Cann, A., & Matson, C. (2014). Sense of humor and social desirability: Understanding how humor styles are perceived. *Personality and Individual Differences*, 66, 176-180. doi:10.1016/j.paid.2014.03.029
- Carretero-Dios, H., Benítez, I., Delgado-Rico, E., Ruch, W., & López-Benítez, R. (2014). Temperamental basis of sense of humor: The Spanish long form of the

- trait version of the State-Trait-Cheerfulness-Inventory. *Personality and Individual Differences*, 68, 77-82. doi:10.1016/j.paid.2014.03.045
- Celso, B. G., Ebener, D. J. & Burkhead, E. J. (2003). Humor coping, health status, and life satisfaction among older adults residing in assisted living facilities. *Aging and Mental Health*, 7, 438-445. doi: 10.1080/13607860310001594691
- Craik, K. H., Lampert, M. D., & Nelson, A. J. (1996). Sense of humor and styles of everyday humorous conduct. *Humor: International Journal of Humor Research*, 9, 273-302. doi:10.1515/humr.1996.9.3-4.273
- Craik, K. H. & Ware, A. P. (2007). Humor and personality in everyday life. In W. Ruch (Ed.), *The sense of humor. Explorations of a personality characteristic* (pp. 63-94). Berlin, Germany: Mouton de Gruyter.
- Cohn, M. A., & Fredrickson, B. L. (2009). Positive emotions. In C. R. Snyder & S. J. Lopez (Eds.), *The Oxford handbook of positive psychology*, (pp. 13-24). New York, NY: Oxford University Press.
- Costa, P. T., Jr., & McCrae, R. R. (1992). NEO PI-R professional manual. Odessa, FL: Psychological Assessment Resources.
- Diener, E. (2000). Subjective Well-Being: The science of happiness and a proposal for a national index. *American Psychologist*, 55, 34-43. doi:10.1037/0003-066X.55.1.34
- Diener, E., Emmons, R. A., Larsen, R. J. & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71-75. doi:10.1207/s15327752jpa4901_13
- Diener E., & Lucas, R. E. (1999). Personality and subjective well-being. In D. Kahneman, E. Diener & N. Schwarz (Eds.), *Well-Being: the foundation of hedonic psychology*, (pp. 223-229). New York, NY: Russell Sage Foundation.

- Ďurka, R., & Ruch, W. (2015). The location of three dispositions towards ridicule in the five-factor personality model in the population of Slovak adults. *Personality and Individual Differences*, 72, 177-181.
doi:10.1016/j.paid.2014.08.045
- Dyck, K. T., & Holtzman, S. (2013). Understanding humor styles and well-being: The importance of social relationships and gender. *Personality and Individual Differences*, 55, 53-58. doi:10.1016/j.paid.2013.01.023
- Edwards, K. R., & Martin, R. A. (2014). The conceptualization, measurement, and role of humor as a character strength in positive psychology. *Europe's Journal of Psychology*, 10, 505-519. doi:10.5964/ejop.v10i3.759
- Freud, S. (1928). Humor. *The International Journal of Psychoanalysis*, 9, 1-6.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American psychologist*, 56, 218-226. doi:10.1037/0003-066X.56.3.218
- Ford, T. E., McCreight, K. A., & Richardson, K. (2014). Affective Style, Humor Styles and Happiness. *Europe's Journal of Psychology*, 10, 451-463.
doi:10.5964/ejop.v10i3.766
- Goldberg, L. R. (1990). An alternative" description of personality": the big-five factor structure. *Journal of personality and social psychology*, 59, 1216.
doi:10.1037/0022-3514.59.6.1216
- Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist*, 48, 26-34. doi:10.1037/0003-066X.48.1.26
- Goldstein, J.H., & McGhee, P.E. (1972). *The psychology of humor: Theoretical perspectives and empirical issues*. New York, NY: Academic Press.

- Heintz, S., & Ruch, W. (2015). An examination of the convergence between the conceptualization and the measurement of humor styles: A study of the construct validity of the Humor Styles Questionnaire. *Humor: International Journal of Humor Research*, 28, 611-633. doi:10.1515/humor-2015-0095
- Hirsch, R.D., Junglas, K., Konradt, B., & Jonitz, M.F. (2010). Humorthérapie bei alten Menschen mit einer Depression: Ergebnisse einer empirischen Untersuchung [Humor therapy in the depressed elderly: Results of an empirical study]. *Zeitschrift für Gerontologie und Geriatrie*, 43, 42–52. doi:10.1007/s00391-009-0086-9
- John, O. P., Donahue, E. M., & Kentle, R. L. (1991). The big five inventory: Versions 4a and 54, institute of personality and social research. *University of California, Berkeley, CA*.
- John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research*, (2nd ed.), (pp. 102-138). New York, NY: The Guilford Press.
- Jovanovic, V. (2011). Do humor styles matter in the relationship between personality and subjective well- being? *Scandinavian Journal of Psychology*, 52, 502-507. doi:10.1111/j.1467-9450.2011.00898.x
- Karou-ei, R. A., Doosti, Y. A., Dehshiri, G. R., & Heidari, M. H. (2009). Humor styles, subjective well-being, and emotional intelligence in college students. *Journal of Iranian Psychologists*, 5, 159-169.
- Kirsh, G. A. & Kuiper, N. A. (2003). Positive and negative aspects of sense of humor: Associations with the constructs of individualism and relatedness. *Humor:*

International Journal of Humor Research, 16, 33-62. doi:

10.1515/humr.2003.004

Köhler, G., & Ruch, W. (1993). *The Cartoon Punch line Production Test - CPPT*.

Unpublished manuscript. University of Düsseldorf, Department of Psychology, Düsseldorf, Germany.

Köhler, G., & Ruch, W. (1996). Sources of variance in current sense of humor inventories: How much substance, how much method variance? *Humor: International Journal of Humor Research*, 9, 363-397.

doi:10.1515/humr.1996.9.3-4.303

Konradt, B., Hirsch, R. D., Jonitz, M. F., & Junglas, K. (2013). Evaluation of a standardized humor group in a clinical setting: A feasibility study for older patients with depression. *International Journal of Geriatric Psychiatry*, 28, 850–857. doi:10.1002/gps.3893

Kuiper, N. A., & Leite, C. (2010). Personality impressions associated with four distinct humor styles. *Scandinavian Journal of Psychology*, 51, 115-122. doi:10.1111/j.1467-9450.2009.00734.x

Lang, F. R., Lüdtke, O., & Asendorpf, J. B. (2001). Testgüte und psychometrische Äquivalenz der deutschen Version des Big Five Inventory (BFI) bei jungen, mittelalten und alten Erwachsenen [Validity and psychometric equivalence of the German version of the Big Five Inventory in young, middle-aged and old adults]. *Diagnostica*, 47, 111-121. doi:10.1026//0012-1924.47.3.111

Lefcourt, H. M. (2001). *Humor: The psychology of living buoyantly*. New York, NY: Springer Science & Business Media.

Lefcourt, H. M. & Martin, R. A. (1986). *Humor and life stress: Antidote to adversity*. Berlin, Germany: Springer.

- Le Goff, J. (1997). Laughter in the Middle Ages. In J. Bremmer & H. Roodenberg (Eds.), *A cultural history of humour: From antiquity to the present day* (pp. 40–53). Cambridge UK: Polity Press.
- Leist, A. K., & Müller, D. (2013). Humor types show different patterns of self-regulation, self-esteem, and well-being. *Journal of Happiness Studies*, 14, 551-569. doi:10.1007/s10902-012-9342-6
- Magnavita, J. J. (2002). *Theories of personality: Contemporary approaches to the science of personality*. New York, NY: Wiley.
- Maiolino, N. B., & Kuiper, N. A. (2014). Integrating humor and positive psychology approaches to psychological well-being. *Europe's Journal of Psychology*, 10, 557-570. doi:10.5964/ejop.v10i3.753
- Martin, R. A. (2003). Sense of humor. In S. J. Lopez & C. R. Snyder (Eds.), *Positive psychological assessment: A handbook of models and measures* (pp. 313–326). Washington, DC: American Psychological Association.
- Martin, R. A. (2007). *The psychology of humor: An integrative approach*. Burlington, MA: Elsevier Academic Press.
- Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. (2003). Individual differences in uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire. *Journal of Research in Personality*, 37, 48-75. doi:10.1016/S0092-6566(02)00534-2
- McCrae, R. R., & Costa, P. T. (1985). Updating Norman's "adequacy taxonomy": Intelligence and personality dimensions in natural language and in questionnaires. *Journal of personality and social psychology*, 49, 710-721. doi:10.1037/0022-3514.49.3.710

- McCrae, R. R., & Costa Jr, P. T. (2013). Introduction to the empirical and theoretical status of the five-factor model of personality traits. In T. A. Widiger & P. T. Jr. Costa (Eds), *Personality disorders and the five-factor model of personality* (3rd ed.) (pp. 15-27). Washington, DC: American Psychological Association
- McGhee, P. E. (1999). *Health, healing and the amuse system: Humor as survival training* (3rd ed.). Dubuque IA: Kendall/Hunt Publishing Company.
- McGhee, P. E. (2010). *Humor as survival training for a stressed-out world. The 7 humor habits program*. Bloomington, IN: Author House.
- Mendiburo- Seguel, A., Páez, D., & Martínez- Sánchez, F. (2015). Humor styles and personality: A meta- analysis of the relation between humor styles and the Big Five personality traits. *Scandinavian journal of psychology*, 56, 335-340.
doi:10.1111/sjop.12209
- Moran, J. M., Rain, M., Page-Gould, E., & Mar, R. A. (2014). Do I amuse you? Asymmetric predictors for humor appreciation and humor production. *Journal of Research in Personality*, 49, 8-13. doi:10.1016/j.jrp.2013.12.002
- O'Quin, K., & Derks, P. (1997). Humor and creativity: A review of the empirical literature. In: Runco, Marc A. (Ed.), *Creativity Research Handbook* (vol. 1). Cresskill, NJ: Hampton Press
- Park, B., & Judd, C. M. (1989). Agreement on initial impressions: Differences due to perceivers, trait dimensions, and target behaviors. *Journal of Personality and Social Psychology*, 56, 493-505. doi:10.1037/0022-3514.56.4.493
- Park, N., & Peterson, C. (2006). Moral competence and character strengths among adolescents: The development and validation of the Values in Action Inventory of Strengths for Youth. *Journal of adolescence*, 29, 891-909.
doi:10.1016/j.adolescence.2006.04.011

- Park, N., Peterson, C., & Seligman, M. E. P. (2006). Character strengths in fifty-four nations and the fifty US states. *The Journal of Positive Psychology, 1*, 118-129. doi:10.1080/17439760600619567
- Paunonen, S. V., & O'Neill, T. A. (2010). Self-reports, peer ratings and construct validity. *European Journal of Personality, 24*, 189-206. doi:10.1002/per.751
- Peterson, C. (2006). *A primer in positive psychology*. New York, NY: Oxford University Press.
- Peterson, C., & Park, N. (2004). Classification and measurement of character strengths: Implications for practice. In P. A. Linley, & S. Joseph, *Positive Psychology in practice* (pp. 433-446). Hoboken, NJ: Wiley
- Peterson, C., Park, N., Pole, N., D'Andrea, W., & Seligman, M. E. P. (2008). Strengths of character and posttraumatic growth. *Journal of Traumatic Stress, 21*, 214-217. doi:10.1002/jts.20332
- Peterson, C., Ruch, W., Beermann, U., Park, N., & Seligman, M. E. P. (2007). Strengths of character, orientations to happiness, and life satisfaction. *Journal of Positive Psychology, 2*, 149-156. doi:10.1080/17439760701228938
- Peterson, C., & Seligman, M.E.P. (2004). *Character strengths and virtues: A handbook and classification*. New York, NY: Oxford University Press/Washington, DC: American Psychological Association.
- Proyer, R. T., & Ruch, W. (2010). Enjoying and fearing laughter: Personality characteristics of gelotophobes, gelotophiles, and katagelasticians. *Psychological Test and Assessment Modeling, 52*, 148-160.
- Proyer, R. T., Ruch, W., & Chen, G. H. (2012). Gelotophobia: Life satisfaction and happiness across cultures. *Humor: International Journal of Humor Research, 25*, 23-40. doi:10.1515/humor-2012-0002,

- Proyer, R. T., Ruch, W., & Müller, L. (2010). Sense of humor among the elderly: Findings with the German version of the SHS. *Zeitschrift für Gerontologie und Geriatrie*, 43, 19-24. doi:10.1007/s00391-009-0082-0
- Proyer, R. T., Wellenzohn, S., Ruch, W. (2014). Character and dealing with laughter: The relation of self- and peer-reported strengths of character with gelotophobia, gelotophilia, and katagelasticism. *Journal of Psychology: Interdisciplinary and Applied*, 148, 113-132.
doi:10.1080/00223980.2012.752336
- Ready, R. E., Clark, L. A., Watson, D., & Westerhouse, K. (2000). Self-and peer-reported personality: Agreement, trait ratability, and the “self-based heuristic”. *Journal of Research in Personality*, 34, 208-224. doi:10.1006/jrpe.1999.2280
- Roberts, R. C. (1988). Humor and the virtues. *Inquiry*, 31, 127–149.
- Ruch, W. (1983). *Humor-Test 3 WD (Form A, B and K)*. Unpublished manuscript, University of Düsseldorf, Department of Psychology, Düsseldorf, Germany.
- Ruch, W. (1992). Assessment of appreciation of humor: Studies with the 3 WD humor test. In C. D. Spielberger, & J. N. Butcher (Eds). *Advances in personality assessment*, (Vol. 9) (pp. 27-75). Hillsdale, MI: Lawrence Erlbaum Associates.
- Ruch, W. (1996) Measurement approaches to the sense of humor: Introduction and overview. *Humor: International Journal of Humor Research*, 9, 239-250.
doi:10.1515/humr.1996.9.3-4.239
- Ruch, W. (2002). Computers with a personality? Lessons to be learned from studies of the psychology of humor. In O. Stock, C. Strappavara, & A. Nijhold (Eds.), *Proceedings of the International workshop on Computational Humor (TWLT14)* (pp. 57-70). Enschede, The Netherlands: University of Twente.

- Ruch, W. (2004). Humor (playfulness). In C. P. Peterson & M. E. P. Seligman (Eds.), *Character strengths and virtues: A handbook and classification* (pp. 583-598). New York, NY: Oxford University Press.
- Ruch, W. (2007). Sense of humor: A new look at an old concept. In W. Ruch (Ed.), *The Sense of Humor: Explorations of a personality characteristic*. (pp.3-14). Berlin, D: Mouton de Gruyter.
- Ruch, W. (2008). The psychology of humor. In V. Raskin (Ed.), *A primer of humor research* (pp. 17-100). Berlin, Germany: Mouton de Gruyter.
- Ruch, W., Beermann, U., & Proyer, R. T. (2009). Investigating the humor of gelotophobes: Does feeling ridiculous equal being humorless? *Humor: International Journal of Humor Research*, 22, 111-143.
doi:10.1515/HUMR.2009.006
- Ruch, W., & Carrell, A. (1998). Trait cheerfulness and the sense of humor. *Personality and Individual Differences*, 24, 551-558. doi:10.1016/S0191-8869(97)00221-3
- Ruch, W., Harzer, C., & Proyer, R. T. (2013). Beyond being timid, witty, and cynical: Big Five personality characteristics of gelotophobes, gelotophiles, and katagelasticians. *International Studies in Humour*, 2, 24-42.
- Ruch, W. & Heintz, S. (2013). Humour styles, personality and psychological well-being: What's humour got to do with it? *European Journal of Humour Research*, 1, 1-24.
- Ruch, W. Hofmann, J. (2012). A temperament approach to humor. In P. Gremigni (Ed.), *Humor and health promotion* (pp. 79-112). Hauppauge, NY: Nova Science Publishers.

- Ruch, W. & Köhler, G. (2007): A temperament approach to humor. In W. Ruch. (Ed.), *The sense of humor: Explorations of a personality characteristic* (pp. 203-230). Berlin, Germany: Mouton de Gruyter.
- Ruch, W., Köhler, G., & van Thriel, Ch. (1996). Assessing the “humorous temperament.” Construction of the facet and standard trait forms of the State-Trait-Cheerfulness-Inventory-STCI. Measurement of the sense of humor [special issue]. *Humor: International Journal of Humor Research*, 9, 303-339. doi:10.1515/humr.1996.9.3-4.303,
- Ruch, W., Köhler, G., & Van Thriel, C. (1997). To be in good or bad humour: Construction of the state form of the State-Trait-Cheerfulness-Inventory—STCI. *Personality and Individual Differences*, 22, 477-491. doi:10.1016/S0191-8869(96)00231-0
- Ruch, W., & McGhee, P. E. (2014). Humor intervention programs. In A. C. Parks & S. M. Schueller (Eds.), *The Wiley Blackwell Handbook of Positive Psychological Interventions*, (pp. 179-193). Oxford, UK: Wiley-Blackwell.
- Ruch, W., & Proyer, R. T. (2009). Extending the study of gelotophobia: On gelotophiles and katagelasticists. *Humor: International Journal of Humor Research*, 22, 183-212. doi:10.1515/HUMR.2009.009
- Ruch, W., & Proyer, R. T. (2015). Mapping strengths into virtues: the relation of the 24 VIA-strengths to six ubiquitous virtues. *Frontiers in psychology*, 6. doi:10.3389/fpsyg.2015.00460
- Ruch, W., Proyer, R. T., Esser, C., & Mitrache, O. (2011). Cheerfulness and everyday humorous conduct. In Romanian Academy, “George Barit” Institute of History, Department of Social Research (Ed.), *Studies and researches in social sciences (Vol. 18)*. Cluj-Napoca, Romania: Argonaut Press.

- Ruch, W., Proyer, R. T., Harzer, C., Park, N., Peterson, C., & Seligman, M. E. P (2010). Values in Action Inventory of Strengths (VIA-IS). Adaptation and Validation of the German Version and the development of a peer-rating form. *Journal of Individual Differences*, 31, 138-149. doi:10.1027/1614-0001/a000022
- Schermer, J. A., Martin, R. A., Martin, N. G., Lynskey, M., & Vernon, P. A. (2013). The general factor of personality and humor styles. *Personality and Individual Differences*, 54, 890-893. doi:10.1016/j.paid.2012.12.026
- Schmidt-Hidding, W. (1963). *Europäische Schlüsselwörter, Band I: Humor und Witz* [*European key words. Volume 1: Humor and Wit*]. München, Germany: Huber.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive Psychology: An introduction. *American Psychologist*, 55, 5–14. doi:10.1037/0003-066X.55.1.5
- Shimai, S., Otake, K., Park, N., Peterson, C., & Seligman, M. E. P (2006). Convergence of character strengths in American and Japanese young adults. *Journal of Happiness Studies*, 7, 311 – 322. doi:10.1007/s10902-005-3647-7
- Snyder, C. R., & Lopez, S. J. (Eds.). (2009). *Handbook of Positive Psychology*. New York, NY: Oxford University Press.
- van Eeden, C., Wissing, M. P., Dreyer, J., Park, N., & Peterson, C. (2008). Validation of the values in action inventory of strengths for youth (VIA-Youth) among South African learners. *Journal of Psychology in Africa*, 18, 143-154. doi:10.1080/14330237.2008.10820181
- Wanzer, M. B., Sparks, L., & Frymier, A. B. (2009). Humorous communication within the lives of older adults: The relationships among humor, coping

efficacy, age, and life satisfaction. *Health Communication*, 24, 128-136.

doi:10.1080/10410230802676482

Zhao, J., Wang, Y. & Kong, F. (2014). Exploring the mediation effect of social support and self-esteem on the relationship between humor style and life satisfaction in Chinese college students. *Personality and Individual Differences*, 64, 126-130. doi:10.1016/j.paid.2014.02.026

PART I – HUMOR AND STRENGTHS OF CHARACTER

Introduction

Under the umbrella term of Positive Psychology, the VIA-Classification of Strengths (Peterson & Seligman, 2004) was developed for providing a “manual of the sanities”, i. e., traits that contribute to and enable a good life. Twenty-four character strengths were assigned to six virtues (wisdom and knowledge, courage, humanity, justice, temperance, and transcendence) recurring in literature and over time. The *Values in Action Inventory of Strengths* (VIA-IS, Peterson, Park & Seligman, 2005) is current standard for the assessment of these character strengths among adults.

Humor is one of the 24 character strengths in the VIA-classification and it is understood as a morally valued trait, as potentially virtuous. Humor contributes to positive psychological functioning. Peterson and Seligman (2004) did define the humorous individual as one “... who is skilled at laughing and teasing, at bringing smiles to the faces of others, at seeing the light side, and at making (not necessarily telling) jokes” (p. 530). Humor is among the most highest endorsed strengths (Park, Peterson & Seligman, 2006), among those strengths yielding the highest correlations with subjective well-being and life satisfaction (see Park, Peterson & Seligman, 2004; Peterson, Ruch, Beermann, Park & Seligman, 2007; Ruch, Proyer, Esser & Mitrache, 2011; Ruch, Proyer, Harzer, Park, Peterson, & Seligman, 2010), and it was found to mediate effects on higher satisfaction with life in people with physical illness (Peterson, Park, & Seligman, 2006).

Humor as a character strength and earlier concepts of humor. Peterson and Seligman (2004) were not the first ones to operationalize humor. In the past humor was seen as a temperament, worldview, aesthetic perception, ability, and attitude, and

numerous tests were designed for its measurement (see Ruch, 2008). It is of interest to have a closer look at the conceptual overlap between humor as a strength and the other approaches.

Peterson and Seligman (2004) acknowledge that there are many facets of humor. “The domain of humor is vast and varied, and there exists a huge terminology for describing its types. Some forms are clearly mean (e.g., mockery, ridicule, sarcasm), and others on the border (e.g., parody, practical jokes). We exercise our prerogative by focusing on those forms of humor that serve some moral good—by making the human condition more bearable by drawing attention to its contradictions, by sustaining good cheer in the face of despair, by building social bonds, and by lubricating social interaction” (p. 530). Thus, from a universe of humor behaviors they selected the ones potentially virtuous. This allows deriving hypotheses what aspects of humor will relate to humor as a strength and which ones will not.

In the present article two approaches are selected to serve as a reference. First, the conceptualization by McGhee (1999) is chosen as a theory driven approach to the sense of humor. McGhee (1999) defines humor as a form of play, the play with ideas. A playful mind is important to successfully process humorous stimuli. Without this playful mind, the same event is perceived, for example, as frightening, puzzling or annoying, but not as funny. Based on this McGhee introduced a multi-faceted concept of sense of humor in which *playfulness* (as a frame of mind) forms the basis for the sense of humor, which is composed of six less basic components (facets) or humor skills. These are supposed to be hierarchically organized from *enjoyment of humor* to *finding humor under stress*, as the ones higher in the hierarchy should be more difficult

to develop. To measure these facets, McGhee (1999) introduced the rationally constructed *sense of humor scale (SHS)*.

We hypothesize that humor as a character strength will strongly overlap with the sense of humor (i.e., the sum of the six facets) without being identical to it. Some facets, like *humor under stress* or *finding humor in everyday life* will more strongly overlap while facets like *enjoyment of humor* (which does not reflect moral goodness or excellence) will only marginally overlap.

The second approach selected as a reference (Craik, Lampert, & Nelson, 1996) covers the most heterogeneous and comprehensive set of humor behaviors--and consequently with five orthogonal factors also the most differentiated structural model of humor so far (Ruch et al., 2011). Craik et al. (1996) collected specific forms of everyday humorous conduct from an act frequency perspective and from a survey of the theoretical and empirical psychological research literature on humor, and they arrived at a set of 100 non-redundant statements, which form the Humorous Behavior Q-Sort Deck (HBQD). In a search for coherent themes a principal component analysis yielded bipolar factors of *socially warm versus cold*, *competent versus inept*, *earthy versus repressed*, *reflective versus boorish*, and *benign versus mean-spirited* humor. The highest intercorrelation ($r = .30$) among the factors was found between the socially warm vs. cold and competent vs. inept styles. There is empirical evidence that the sense of humor relates most strongly to the socially warm humor style and to a minor extent to the competent humor style; this could be found for both an index composed of HBQD items (Craik et al., 1996) as well as the SHS (Ruch et al., 2011).

We expect a positive correlation between humor as a character strength and the socially warm (vs. cold) humorous style; i.e., the first and major factor underlying

everyday humorous conduct. The *socially warm vs. cold* factor describes the tendency to use humor to promote good will vs. an avoidance or aloofness regarding mirthful behavior. Sample statements for the socially warm style are items like “*maintains group morale through humor*” or “*uses good natured jests to put others at ease.*” Elements of the definition by Peterson and Seligman (2004), such as, “sustaining good cheer in the face of despair”, “building social bonds”, and “lubricating social interaction” refer to the socially warm humor style and there also is item content overlap between HBQD and the VIA-humor scale. It is expected that while the correlation will be high it will not be perfect due to different reasons. For example, the HBQD factor is bipolar, also involving the socially cold elements, but humor as a strength is unipolar--like all strengths in the VIA-classification. Furthermore in the HBQD the answer format is ipsative (not allowing people to be high in all scales but high scores in one are compensated by low scores in the other scales).

Humor and virtues. Peterson and Seligman (2004) assigned humor to the virtue of transcendence but acknowledged there were others options too. “In some cases, the classification of a given strength under a core virtue can be debated. Humor, for example, might be considered a strength of humanity because playfulness can create social bonds. It might also be classified as a wisdom strength, inasmuch as humor helps us acquire, perfect, and use knowledge. But we consider humor a strength of transcendence: Like hope and spirituality, humor connects us to something larger in the universe, specifically the irony of the human condition, the incongruent congruencies to which playful people call our attention, for our education and amusement “ (p.31). In a recent study humor (i.e., the items of 12 current instruments) was compatible with all

virtues but most strongly with the humanity, wisdom and transcendence (Beermann & Ruch, 2009).

One may argue that virtues affect the expression (or non expression) and appreciation of humor in a variety of ways. In the past under the influence of humanism, in as much as people started to distinguish between the benevolent, philanthropic, laughing with forms of humor and laughing at people. This eventually shaped the concept of sense of humor, which since then typically was associated with love and the “good heart” (Schmidt-Hidding, 1963). Hence we expect positive correlations between humor as a strength, sense of humor and the socially warm humor style and the strengths assigned to the virtue of humanity (i.e., love, kindness, and social intelligence). Furthermore, we expect a positive correlation between the strength of wisdom and knowledge and the *benign vs. mean-spirited* factor, which describes persons having pleasure in mentally stimulating and innocuous humor-related activities (e.g., “*Enjoys witticisms which are intellectually challenging*”) vs. having the tendency to use humor to attack or belittle others. The low pole of this dimension seems to express vice, or at least the absence of virtue. It is expected that mean spirited humor will be correlated with the absence temperance, humanity and justice. Thus, here different hypotheses are put forward for the two styles loaded on the opposing poles of the dimension. This is in line with the finding of Ruch et al. (2011) who found that the bipolarity of the styles is not given for all pairs of styles. Thus, it will be necessary to analyze not only the five bipolar humor factors, but also the 10 unipolar styles. Furthermore, a temperance might also be negatively correlated with the *earthy vs. repressed* factor which describes a harsh delight in joking about taboo topics on the

positive pole and an inhibition concerning macabre, sexual or scatological modes of humor on the negative.

The two remaining HBQD dimensions do not show an apparent link to virtues and no hypotheses were put forward. The *reflective vs. boorish* factor describes people who discern the spontaneous humor found in doings of oneself, other persons or everyday occurrences (e.g., “*Jokes about problems to make them seem ridiculous*”) vs. the use of an unsightful, insensitive and competitive use of humor. The *competent vs. inept* factor describes active wit, the capacity to convey humorous anecdotes effectively (e.g., “*Manifests humor in the form of clever retorts to other’s remarks*”) vs. the lack of skill and confidence in dealing with humor.

Aim of the study

The aim of the study was twofold. (1) To examine the relation between humor as a strength and the sense of humor (SHS), and to locate the former within a factorially comprehensive taxonomy of humor (HBQD). The expectation was to find high convergence between humor as a strength, the sense of humor and the socially warm humorous style of the HBQD. (2) To investigate the relationship between humor (as a strength, sense of humor and the humorous styles measured by the HBQD) and the character strengths and the related virtues measured by the VIA-IS.

Method

Participants. The sample consisted of $N = 203$ participants; 84 were males and 119 were females. The mean age of the participants was 39.12 ($SD = 15.49$) and ranged from 18 to 76 years. The sample was highly educated; 51.6% held a degree from a university or a college of higher education.

Material. The *Values in Action Inventory of Strengths* (VIA-IS; Peterson et al., 2005), adapted to German by Ruch et al. (2010) consists of 240 items in a 5-point Likert-style format (from 1 = “very much like me” to 5 = “very much unlike me”). The self-assessment of the 24 character strengths (10 items per strength) included the classification by Peterson and Seligman (2004). A sample item is “Whenever my friends are in a gloomy mood I try to tease them out of it” (humor). The scale is widely used in research and all scales show acceptable reliabilities. Alpha coefficients in this sample ranged from .61 (authenticity) to .89 (creativity, religiousness; *median* = .76) and were comparable to former studies (Peterson & Seligman, 2004).

The *Sense of Humor Scale* (SHS; McGhee, 1999; German adaptation by Proyer, Ruch & Müller, 2010) consists of 40 items in a 7-point answer format (1 = “strongly disagree” to 7 = “strongly agree”) measuring *playful vs. serious attitude* (8 items; sample item: “I am in a serious frame of mind most of the time.”), *positive vs. negative mood* (8 items; “I have a lot of joy in my life.”), and *sense of humor* (24 items; “It is important for me to have a lot of humor in my life”). The latter is composed of six facets (with 4 items each), namely enjoyment of humor, verbal humor, humor in everyday life, laughing at yourself, and humor under stress. The alpha coefficients in the present study were .66 for playful/serious attitude, .85 for positive/negative mood and .87 for sense of humor, and .90 for the total score.

The *Humorous Behaviour Q-Sort-Deck* (HBQD; Craik et al., 1996) consists of 100 statements describing humor-related behaviors or behavior tendencies, in a 9 point answer format (1 = “very uncharacteristic” to 9 = “very characteristic”) with the following distribution: 5, 8, 12, 16, 18, 16, 12, 8, 5. The statements were aggregated to five bipolar styles of humorous conduct, namely *socially warm vs. cold*, *reflective vs.*

boorish, competent vs. inept, earthy vs. repressed, and benign vs. mean-spirited humorous style. A sample item is: “Maintains group morale through humor” (socially warm). The five factors were recovered from a principal component analysis of the 10 styles (Eigenvalues 1-7: 4.29, 2.74, 2.22, 1.34, 1.05, 0.90, and 0.81), each represented by two item parcels consisting of 3 to 8 items each. Five factors explaining 59.54% of the variance were rotated to the OBLIMIN criterion (Delta = 0). The intercorrelations of the factors ranged from $r = .00$ (earthy versus repressed with reflective versus boorish) to $r = -.20$ (earthy versus repressed with competent versus inept) with a median of .05. Results showed that the bipolarity of the 10 styles was evident with the exception of mean-spirited humor, which not only seemed to be opposite to benign style but also the repressed style. In other words, two item parcels representing mean spirited humor not only loaded negatively on the benign vs. mean-spirited factor, but also (and more highly so) positively on the *earthy versus repressed* factor.

Procedure.

The adaptation of the HBQD. The first German translation (e.g., Ruch et al., 2011) was revised as some of the items yielded unexpected results and also the five-factor structure could not be well replicated. This revision involved several steps including a new translation of all items, followed by an independent back translation. A native speaker compared the translation to the original English items and discrepancies were highlighted. In case the original meaning of the items was not well represented, the authors of the HBQD were asked to comment on the revision.

Data collection. Participants filled in paper and pencil version of the two humor questionnaires (SHS and HBQD) and the VIA-IS online. They did not receive any payment but were provided feedback about their scores relative to other respondents.

Results

Relations between the humor scales. Correlations between demographics and all scales that entered the study yielded coefficients compatible with prior findings. Although they were generally low ($r^2 < .10$) the subsequent analyses controlled for age and gender. For an examination of the substance overlap of the three humor questionnaires used in this study, partial correlations among the five the SHS facets, HBQD factors, and the VIA-humor scale, were computed. Table 4 shows the respective correlation coefficients of the SHS scales, VIA-IS humor and the HBQD humor factors.

Table 4 shows that the three humor concepts overlapped very well. The pair wise correlation between the VIA-IS humor scale, sense of humor and socially warm vs. cold humor yielded coefficients between $r = .58$ and $r = .63$. However, both VIA-IS humor and sense of humor also showed relations to other HBQD styles, most notably with competent ($r = .27$; VIA-IS humor; $r = .29$; sense of humor) and earthy humor ($r = .28$; SHS only).

Table 4

Partial correlations between the SHS scales, VIA-IS humor and the HBQD humor factors, controlling for age and gender

Scales	VIA-IS	HBQD humor factors					<i>R</i>
	Humor	Socially warm/ cold	Reflective/ boorish	Compe- tent/inept	Earthy/ repressed	Benign/ mean- spirited	
SHS							
Attitude	.52***	.54***	.05	.23**	.12	.15*	.57
Mood	.25***	.25***	-.02	.06	-.10	.13	.29
SOH	.63***	.58***	.06	.29***	.28***	.15*	.67
Enjoyment	.29***	.33***	-.26***	-.09	.08	.10	.42
Laughter	.50***	.50***	-.08	.13	.16*	.07	.57
Verbal	.43***	.48***	.02	.33***	.27***	.19**	.61
Everyday	.52***	.43***	.20**	.25***	.16*	.15*	.54
Laughing at yourself	.45***	.35***	.20**	.29***	.28***	.07	.52
Humor under Stress	.49***	.36***	.19**	.30***	.22**	.07	.50
HQ	.63***	.59***	.05	.27***	.19**	.18*	.66
VIS-IS humor	--	.59***	-.04	.27***	.13	.10	.64

Note: $N = 199 - 203$. Partial correlation controlled for age, gender. Attitude = playful/serious attitude, Mood = positive/negative mood, SOH = sense of humor, Enjoyment = enjoyment of humor, Verbal = verbal humor, Everyday = finding humor in everyday life, HQ = total score.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Two multiple regressions analyses were performed with the five HBQD styles as predictors and humor as a strength and sense of humor as criteria; the inspection of the beta weights will allow to see whether competent humor (or any of the other styles) has incremental validity on top of socially warm vs. cold humor. The analysis showed that the HBQD styles explained both of the humor concepts very well ($R = .64$ and $.67$, respectively). However, the beta coefficients were only high for socially warm vs. cold humor ($.55$, $.56$, both $p < .001$) while the beta coefficients for competent vs. inept were low for both VIA-IS humor and sense of humor ($\beta = .16$, and $.10$, respectively) and only reached significance for VIA-IS humor ($p < .05$) while for sense of humor, the coefficient just failed to reach significance ($p < .059$)¹¹. Earthy vs. repressed was significant when predicting sense of humor ($\beta = .23$, $p < .001$) and to a smaller amount when predicting humor as strengths ($\beta = .14$, $p = .05$). Furthermore, also reflective vs. boorish humor was a significant predictor for sense of humor ($\beta = .11$, $p < .05$).

A closer look at the SHS facets showed that all of the facets yielded relations to the HBQD styles. The earthy humorous style was related to the facets verbal humor and laughing at yourself. Boorish humorous style indicated enjoyment of humor. The results is compatible with the assumption that the humor skills are ordered according to their difficulty (McGhee, 1999). The facets more difficult to develop showed positive correlations with reflective and competent humor (i.e., finding humor in everyday life: $r = .20$; $.25$; laughing at yourself: $r = .20$; $.29$; humor under stress: $r = .19$; $.30$). The

¹ A closer look at the items showed that only a few SHS items were correlated with competent vs. inept humor after partialling out the effects of socially warm vs. cold humor (e.g., SHS10: *My sense of humor rarely abandons me under stress* [$r = .32$]; SHS35: *I often make spontaneous witty remarks (no pun)* [$r = .30$]; SHS25: *I often create my own spontaneous puns* [$r = .25$]). And vice versa of the competent items only one showed significant correlations to sense of humor (Item 84: *Laughs without discriminating between more and less clever remarks* [$r = -.19$]) and one to humor as a strength (Item 68: *Crushed when humorous efforts meet with less than enthusiastic reception* [$r = -.17$])

facets assumed to be easily developed did not or negatively correlate with both humor styles. Multiple regression predicting each of the facets by entering the five HBQD styles yielded coefficients between $R = .42$ (enjoyment of humor) and $R = .61$ (verbal humor).

Playfulness plays an important role in the VIA-classification (as it is understood synonymous with humor) and it builds the basis of sense of humor in the SHS. As expected humor in the VIA-IS and the playful/serious attitude share a high amount variance ($r = .55$). However, it is important to examine whether playfulness has incremental validity (in addition to sense of humor) in predicting humor as strengths. A stepwise regression predicting humor as strength by entering the three SHS scales yielded an R of .66 and showed that the sense of humor was most predictive ($\beta = .54$, $p < .001$) and that playful attitude played an additional but minor role ($\beta = .18$, $p < .01$). Positive vs. negative mood did not contribute to humor as strength ($\beta = .04$). Similarly, sense of humor was most predictive of the socially warm style ($R = .60$, $\beta = .42$, $p < .001$) and positive mood was not predictive ($\beta = -.01$, ns). However, a playful attitude played a bigger role ($\beta = .29$, $p < .001$) and raised the multiple correlation to $R = .64$.

Humor and character strengths. Partial correlations, controlled for age and gender, were computed between the character strengths, the sense of humor and the humor styles. In order to systematize these results the coefficients were averaged across the strengths of each virtue using only the purest markers² (for results see Table 5).

Table 5 shows that the correlation coefficients between the 23 character strengths and the VIA-IS humor ranged from $r = -.04$ to $r = .54$ (kindness) with a median of .27, for sense of humor from $r = -.19$ (modesty) to $r = .34$ (love; $Mdn = .16$) and for socially warm vs. cold from $r = -.23$ (modesty) to $r = .37$ (love) with a median of .17. These three different humor conceptualizations also showed similar correlational patterns with highest relations to creativity, bravery, zest, love, kindness and social intelligence. The VIA-IS humor yielded the numerically highest correlation coefficients (perhaps due to stronger method overlap); the HBQD yielded the lowest (presumably due to the different answer format).

² In an expert rating ($n = 44$) study theologians, psychologists and philosophers but also laypersons ($n = 35$) rated how good examples each of the 24 strengths are for the six virtues. A few of the strengths had a considerable second relation to a further virtue and were not considered in this analysis. Thus, endurance (courage), social intelligence (humanity), teamwork (justice), leadership (justice), and forgiveness (temperance) were not used in the averaging.

Table 5

Partial correlations between the scales of the VIA-IS (except humor), the five HBQD humor factors, SHS scales and the mean correlations across the six virtues controlled for age and gender

VIA-IS	VIA-IS	SHS			HBQD humor factors				
	Humor	Attitude	Mood	Sense of humor	Socially warm/cold	Reflective/boorish	Competent/inept	Earthy/repressed	Benign/mean-spirited
Creativity	.27**	.17	.07	.27**	.17	-.06	.12	.04	.16
Curiosity	.30**	.30**	.50**	.25**	.20*	.04	.12	-.08	.19*
Open-mindedness	.01	-.10	-.02	-.04	-.18	.13	-.01	-.17	.08
Love of learning	.22*	.13	.21*	.15	.03	.08	.18	-.09	.22*
Perspective	.20*	.09	.08	.16	.06	-.03	.15	-.05	.08
Bravery	.33**	.21*	.21*	.26**	.18	-.02	.26**	.15	.09
Persistence	.15	-.04	.30**	.00	-.03	-.18	.14	-.19*	.08
Honesty	.26**	.10	.18*	.08	.11	-.07	.03	-.18	.12

(Table continues)

Table 5 (continued)

	VIA-IS	SHS			HBQD humor factors				
VIA-IS	Humor	Attitude	Mood	Sense of humor	Socially warm/cold	Reflective/boorish	Competent/inept	Earthy/repressed	Benign/mean-spirited
Zest	.41**	.28**	.46**	.23*	.24*	-.19*	.04	-.16	.08
Love	.50**	.42**	.39**	.34**	.37**	-.01	.08	.00	.16
Kindness	.54**	.27**	.14	.26**	.32**	-.19*	-.01	-.17	.16
Social intelligence	.37**	.26**	.17	.24**	.21*	.06	.07	-.06	.10
Teamwork	.37**	.18*	.20*	.15	.21*	-.04	-.03	-.20*	.05
Fairness	.27**	.08	.19*	.03	.08	.00	-.16	-.15	.18
Leadership	.37**	.10	.21*	.11	.21*	-.10	.00	-.27**	.06
Forgiveness	.21*	.26**	.33**	.19*	.16*	-.04	-.02	-.06	.18
Modesty	-.03	-.12	.07	-.19*	-.23*	.00	-.29**	-.36**	-.09
Prudence	-.04	-.23*	.00	-.16	-.19*	-.06	-.14	-.37**	-.02
Self-regulation	.06	-.16	.10	-.06	.01	-.18	.04	-.28**	.12
Beauty	.26**	.09	-.04	.13	.11	.03	-.10	-.14	.21*

(Table continues)

Table 5 (continued)

	VIA-IS	SHS			HBQD humor factors				
VIA-IS	Humor	Attitude	Mood	Sense of humor	Socially warm/cold	Reflective/boorish	Competent/inept	Earthy/repressed	Benign/mean-spirited
Gratitude	.34**	.21*	.28**	.16	.20*	-.12	-.08	-.22*	.21*
Hope	.36**	.29**	.52**	.18	.19*	-.14	.04	-.15	.07
Religiousness	.11	.09	.17	.05	.14	-.15	-.17	-.24**	.21*
Virtues									
Wisdom and knowledge	.20	.12	.17	.16	.06	.03	.11	-.07	.15
Courage	.33	.20	.28	.19	.18	-.09	.11	-.06	.10
Humanity	.52	.35	.27	.30	.35	-.10	.04	-.09	.16
Justice	.27	.08	.19	.03	.08	.00	-.16	-.15	.18
Temperance	.00	-.17	.06	-.14	-.14	-.08	-.13	-.34	.00
Transcendence	.27	.17	.23	.13	.16	-.09	-.08	-.19	.17
<i>M</i>	.27	.13	.20	.11	.11	-.06	-.02	-.15	.13

Note: $N = 203$. Partial correlation controlled for age, gender. Attitude = playful/serious attitude, Mood = positive/negative mood, Beauty = Appreciation of beauty and excellence.

* $p < .01$. ** $p < .001$.

Table 5 also shows that these three humor conceptualizations primarily related to humanity, with a weaker relation to courage (primarily based on bravery and zest). The strengths of wisdom and knowledge were not related to these three but creativity and curiosity were.

Playfulness, as a motor of the sense of humor and the strength akin to the VIA-IS humor had indeed a similar profile of correlations as the three prime humor scales. The correlations between the 23 character strengths and playful/serious attitude ranged from $r = -.23$ (prudence) to $r = .42$ (love; $Mdn = .13$). While this attitude correlated substantially with single strength it was only consistently related to strengths of humanity. As a bipolar scale some of the coefficients (i.e., to temperance) might be due to the seriousness side of the dimension. The scale of positive/negative mood showed a few high correlations (ranging from $r = -.04$ to $r = .52$, hope; $Mdn = .19$) but showed only consistent relations to courage and justice.

The correlations for the remaining HBQD³ factors were lower than for socially warm vs. cold and there were clearly different patterns. For reflective vs. boorish the coefficients ranged from $r = -.19$ (zest, kindness) to $r = .13$ (open-mindedness; $Mdn = -.04$) and none of the virtues were systematically involved. The coefficients for competent vs. inept ranged from $r = -.29$ (modesty) to $r = .26$ (bravery; $Mdn = .02$) and they did not cumulate around a specific virtue. The coefficients for earthy vs. repressed ranged from $r = -.37$ (prudence) to $r = .15$ (bravery; $Mdn = -.16$) and repressed humor seemed to be systematically associated with temperance, and to a lower extent, with justice and transcendence. Finally, for benign vs. mean-spirited

³ As an aside it should be mentioned that the Q-Sort technique provides ipsative data. Pearson correlations between HBQD factors and ipsative ranked character strengths were computed as well. The same pattern arose as shown in Table 5. As expected, the same answering format led to higher correlation coefficients.

the coefficients ranged from $r = -.09$ to $r = .22$ (love of learning; $Mdn = .12$) and while Table 5 shows mean correlation coefficients that were different from zero one can see that for none of the virtues each of the selected strengths were involved.

As not all factors were perfectly bipolar, partial correlations were also computed between the VIA-IS strength and the first unrotated factor extracted from the items defining each of the 10 styles. Indeed, looking at the poles separately a very different pattern emerged. As expected, mean-spirited humor was highly negatively correlated with each of the selected strengths of justice ($M = -.31$) and temperance ($M = .30$), but also of transcendence ($M = -.27$). Furthermore, individual, but not all strength of humanity ($M = -.20$), courage ($M = -.19$) and wisdom ($M = -.14$) reached significance. Benign humor did not show the opposite correlation pattern. On the contrary, none of the virtues was systematically related to benign humor. The expected relationship with the strengths of wisdom ($M = .15$) could not be substantiated; while two of the strengths showed the expected positive correlations (curiosity: $r = .20$; love of learning: $r = .24$), the other three were not systematically related. The imperfect bipolarity of these two styles was underscored by the fact that first unrotated factors from the benign items and the mean-spirited items only correlated slightly negative ($r = -.26$; $p < .01$).

Furthermore, while the socially warm vs. socially cold factors clearly were opposite ($r = -.63$, $p < .001$), the socially warm and cold scales did not show a clear bipolar pattern. Socially warm humor was not only highly correlated with humanity ($M = .36$), but also to a smaller amount with the strengths of transcendence ($M = .19$), except beauty, which did not show significant correlation. In contrast, socially cold humor was also highly correlated with humanity ($M = -.25$) and additionally with individual but not all of the selected strengths of temperance ($M = .26$; modesty:

$r = .35$; prudence: $r = .34$). Finally, the earthy scale was highly negatively correlated with all of the selected strengths of temperance ($M = -.23$), while the repressed scale did not show significant correlations to any of the strengths. The factors extracted from the earthy vs. repressed humor style items were highly negatively correlated ($r = -.57, p < .001$). The correlation for reflective vs. boorish ($r = -.41, p < .001$) and competent vs. inept ($r = -.34, p < .001$) item sets were in the mid range but like for earthy vs. repressed they produced opposite correlational patterns.

Discussion

The first aim of the study was to investigate humor as strength within the framework of two other conceptualizations of humor, namely the *sense of humor* (McGhee, 1999) and the five styles of everyday humorous conduct (Craig et al., 1996). The results confirmed the assumptions that these three concepts do overlap to a high extent, albeit not perfectly. The imperfect overlap lies in both methodological and content-related issues. Regarding the former it is clear that imperfect reliability lowered the correlations and correction for attenuation boosts the coefficients by app. 10 and the resulting coefficients are between .69 and .73. Furthermore, the sense of humor scale and the VIA-IS scale are unipolar and only contain positively keyed items while the socially warm and cold scale is bipolar and the balanced keying allows for a better control of acquiescence. Finally, the scales differ regarding the answer formats (e.g., ipsative vs. rating format); the Q-sort method limits the variation in scores in socially warm vs. cold scale as these are perfectly predicted by a linear combination of the other four styles. Regarding the contents, all three emphasize laughter and positive emotions, and maintaining good cheer during adversity. However, the concepts also have unique elements; only the sense of humor concept involves the element of enjoyment of humor and only the socially warm vs. cold style

elaborated the lower end of the continuum. Therefore, as expected, the facets of enjoyment of humor was the one SHS facet with the lowest correlation with the VIA-IS humor scale (and the socially warm vs. cold humor style). The items of the socially cold style reflect contents like being only humorous in the company of close friends or that can only laugh with difficulties at personal failings. Not surprisingly, this dimension of socially warm vs. socially cold humor shows a negative relation to modesty, while the VIA-IS humor scale does not. Finally, the VIA-IS scale merges playfulness (albeit with only few items) and humor in one concept whereas playfulness and sense of humor are kept separate in the SHS and the socially warm vs. cold styles does not mention play at all. Future studies might want to apply all items of the three humor scales in the same answer format to a sample of participants to test whether or not a single factor accounts for the variation in this joint item pool.

Like socially warm humor, also sense of humor and humor as strength correlated with competent humor. This replicates findings of Craik et al. (1996) that showed that a sense of humor-index correlated most highly ($r = .59$) with socially warm vs. cold humor and also positively with competent humor ($r = .32$). This suggests that the socially constructive uses of humor and the (self-reported) active wit and ability to tell jokes effectively are positively correlated. When controlling for the intercorrelation between the socially warm vs. cold and the competent vs. inept humor (.30 in Craik et al., 1996) both the sense of humor measure and humor as strengths still correlate positively to the extent of .19 with the competent humor style (partial correlation). This is exactly the same coefficient that can be computed for the results given by Craik et al. (1996). However, linear regression showed, that competent humor was not the only predictor besides socially warm humor. For humor as strength, also earthy humor was a significant predictor. Interestingly earthy and

reflective humor did both prove to be better predictors for sense of humor than competent humor. This implies that competent humor operates as a suppressor for other humor styles. Therefore, the sense of humor goes beyond the social benevolent use of humor and includes a perceived competence and pensive humor, which is non-inhibited. It appears that the inclusion of self-reported ability is a key distinguishing factor that separated socially warm vs. cold humor and both humor as a strength and the sense of humor by making the former appear more narrow compared to the latter two. Consequently, this raises the question, which cannot be answered yet, whether this perceived ability is an essential part of sense of humor and humor as a strength or this is only an artifact due to mixture of use of temperament and ability words in the item pool. Studies on the nature of the sense of humor are needed that explore the typical and maximal behavior elements; how much is temperament and how much of humor is ability. It should be noted that self-reports of wit are typically not substantially related to performance measures of humor creation (Ruch, 2004).

The present study demonstrates that playfulness, as the motor of sense of humor, shows the same pattern of relationship as sense of humor and socially warm humor. This validates the conceptualization of humor in the VIA-classification, where humor and playfulness are merged into one concept. The dimension positive vs. negative mood shows the same pattern of relationship, but to a lower amount. Hence, McGhee's (1999) model of sense of humor and its underlying dimensions are supported by this data.

The remaining two HBQD humor styles (reflective vs. boorish and benign vs. mean-spirited) were not related to the VIA-IS humor scale. This is a consequence of restricting humor as character strengths to "... those forms of humor that serve some moral good" (Peterson & Seligman, 2004; p. 530). While humor styles with a

negative connotation were excluded it is still surprising that mean-spirited humor is not negatively related to humor as character strength.

The second aim of the study was to further illuminate the relationship between humor and virtues. The findings clearly support the prime assignment of humor to humanity. This could not only be found for humor as strengths, but also for the sense of humor and socially warm humor. This is compatible of the findings that experts rated the VIA-IS humor items to be most prototypical for humanity and, to a lower extend, to transcendence (Beermann & Ruch, 2009). Humor seems to be a good vehicle to express humanity, i.e., to relate to others in a kind, empathetic, and benevolent way. Indeed, a couple of centuries ago the rise of humanism shaped the meaning of humor by bringing forward the distinctions of “good humor” vs. “bad humor” and “true wit” vs. “false wit”; i.e., the separation of laughing with and laughing at (Ruch, 2004). Apparently, the impact of humanism was strong and lasting and did not only form the meaning of the sense of humor but even today the major factor underlying the 100 HBQD items represents humanity.

Interestingly, humor as a strength was highly related to all but one (i.e., temperance) of the six virtues. This might be a bit inflated by sharing the same answer format, but at least courage is also related to sense of humor and socially warm humor. However, there is also evidence that the VIA-IS humor scale does not cover all the humor styles that are potentially virtuous. The strongest relation to (the absence of) virtuous behavior showed mean-spirited humor, with negative correlations to five out of six virtues (exception: wisdom and knowledge). Mean-spirited humor was antagonistic to strengths of justice, temperance, and transcendence. Likewise, also earthy humor was negatively related to the absence of virtue; it was negatively related to temperance (but also transcendence and justice). Interestingly, no such correlations

were found for repressed humor; i.e., the opposite humor style for which the hypotheses was set up. Furthermore, the strengths of temperance also related to socially cold humor. Thus, temperance is antagonistic to expressing the harsh delight in joking about taboo topics (i.e., earthy humor) and converges with an avoidance or aloofness regarding mirthful behavior (i.e., socially cold). In sum, like in the prior study (Beermann & Ruch, 2009) all six virtue categories were compatible with humor and three of the humor styles correlated with the virtue indicators. Both competent vs. inept and reflective vs. boorish failed to correlate clearly with any virtue. Reflective (i.e., discerning the spontaneous humor found in doings of oneself, other persons or everyday occurrences) and competent (i.e., active wit, the capacity to convey humorous anecdotes effectively) at least have a weak overlap with the strengths of wisdom and knowledge. A potential relationship has been weakened, at least in part, by the differences in answer format and a study using the five styles in a rating format is required. However, both competent and reflective tended to correlate with the component of the sense of humor that are more difficult to acquire (McGhee, 1999). Clearly, more research is needed but so far it is safe to state that at least three out of the five styles relate to virtues. It needs to be added though that in the present study no direct measure of virtue was utilized but prototypical character strengths were aggregated to form an index for the six virtues.

Recently, McGhee (2010) stated that even though humor contributes to positive psychological functioning there seems to be lack of interest in humor within Positive Psychology. This might be, in part, due to the fact that the morally good is not so salient, or perhaps because wit also may be guided by vice. The present study not only clearly showed the strong link between benevolent forms of humor and

humanity, but also the various ways in which virtues are involved in not showing mean-spirited and earthy forms of humor behaviors.

The present study is limited to the five dimensions inherent in the HBQD. In the present study the same factors were found than the ones reported by Craik et al. (1996) when analyzing item parcels. However, a closer look at the 10 unipolar humor styles showed that the bipolar structure of the five factors is not given for all of the styles. Especially the benign and the mean-spirited humor styles seem to be only weakly antagonistic. A further problem with this factor already emerged in the study by Ruch et al. (2011). They found that the self-evaluation of earthy vs. repressed correlated more highly with the peer evaluation of benign vs. mean-spirited humor style than the self-evaluation of benign vs. mean-spirited did. Thus, earthy humor was considered as mean-spirited by peers. Future studies of humor and virtues should also incorporate peer assessments, and ideally a direct assessment of virtues.

References part I

- Beermann, U., & Ruch, W. (2009). How virtuous is humor? What we can learn from current instruments. *The Journal of Positive Psychology, 4*, 528-539.
doi:10.1080/17439760903262859
- Craik, K. H., Lampert, M. D., & Nelson, A.J. (1996). Sense of humor and styles of everyday humorous conduct. *Humor: International Journal of Humor Research, 9*, 273-302. doi:10.1515/humr.1996.9.3-4.273
- McGhee, P. E. (1999). *Health, healing and the amuse system: Humor as survival training* (3rd ed.). Dubuque: Kendall/Hunt Publishing Company.
- McGhee, P. E. (2010). *Humor: The lighter path to resilience and health*. Bloomington: AuthorHouse.
- Park, N., Peterson, C., & Seligman, M. E. P. (2004). Strengths of character and well-being. *Journal of Social and Clinical Psychology, 23*, 603-619.
doi:10.1521/jscp.23.5.603.50748
- Park, N., Peterson, C., & Seligman, M. E. P. (2006). Character strengths in fifty-four nations and the fifty US states. *Journal of Positive Psychology, 1*, 118-129.
doi:10.1080/17439760600619567
- Peterson, C., Park, N., & Seligman, M. E. P. (2005). Assessment of character strengths. In P. Koocher, J. C. Norcross, & S.S. Hill III (Eds.), *Psychologists' desk reference* (2nd ed., pp. 93-98). New York: Oxford University Press.
- Peterson, C., Park, N., & Seligman, M. E. P. (2006). Greater strengths of character and recovery from illness. *Journal of Positive Psychology, 1*, 7-26.
doi:10.1080/17439760500372739

- Peterson, C., Ruch, W., Beermann, U., Park, N., & Seligman, M. E. P. (2007). Strengths of character, orientation to happiness, and life satisfaction. *The Journal of Positive Psychology*, 2, 149-156. doi:10.1080/17439760701228938
- Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. New York: Oxford University Press.
- Proyer, R. T., Ruch, W., & Müller, L. (2010). Sense of humor among the elderly: Findings using the German version of the SHS. *Zeitschrift für Gerontologie und Geriatrie*, 43, 19-24. doi:10.1007/s00391-009-0082-0
- Ruch, W. (2004). Humor (playfulness). In C. P. Peterson & M. E. P. Seligman (Eds.), *Character strengths and virtues: A handbook and classification* (pp. 583-598). New York: Oxford University Press.
- Ruch, W. (2008). The psychology of humor. In V. Raskin (Ed.), *A primer of humor research* (pp. 17-100). Berlin: Mouton de Gruyter.
- Ruch, W., Proyer, R. P., Esser, C., & Mitrache, O. (2011). *Cheerfulness and everyday humorous conduct*. In Romanian Academy, "George Barit" Institute of History, Department of Social Research (Ed.), *Studies and researches in social sciences (Vol. 18)*. Cluj-Napoca, Romania: Argonaut Press.
- Ruch, W., Proyer, R. T., Harzer, C., Park, N., Peterson, C., & Seligman, M. E. P. (2010). Adaptation and validation of the German version of the Values in Action Inventory of Strengths (VIA-IS) and the development of a peer-rating form. *Journal of Individual Differences*, 31, 138-149. doi:10.1027/1614-0001/a000022
- Schmidt-Hidding, W. (1963). *Europäische Schlüsselwörter. Band I: Humor und Witz* [European key terms. Volume I: Humor and Wit] Munich, Germany: Huber.

**PART II – THE DIMENSIONS OF HUMOR: A HIERARCHICAL FACTOR
ANALYSIS APPROACH**

Introduction

Researchers agree about humor being a multidimensional construct. However, there is no agreement about the exact number of its underlying dimensions yet (Ruch, 2008). In research, a positive, unidimensional conceptualization of the humor is typically considered to predict other criteria such as for example, mental and physical health or life satisfaction. However, by only considering one dimension, important findings might be disregarded since earlier research suggests that at least two dimensions are needed: Ruch (1995) demonstrated with a taxonomical study of humor related verbs, nouns and adjectives, that an affective dimension of positive-negative mood and a mental dimension (playful vs. serious) were needed to explain all of the humor-related German words. Nonetheless, most theories assume more than two factors, and it is obvious, that studies dealing with the function of humor cannot be considered as comprehensive if not all kinds of humorous behavior are investigated. Knowing the dimensions is important for a better understanding of humor and allowing for better predictions in humor research. Therefore, the purpose of the present study is to test the dimensions of humorous behavior.

One possible way to examine the underlying dimensions of a construct in personality is to collect all relevant behavior into traits. In a second step, a factor analysis can be computed to identify how many dimensions are needed to explain the whole field. Of course, such an analysis should be based on a comprehensive sample of humor behaviors. The HBQD covers the most heterogeneous and comprehensive set of humor behaviors and represents, with five orthogonal factors, the most differentiated structural model of humor so far (Ruch, Proyer, Esser & Mitrache, 2011). For this reason, the *Humorous Behavior Q-Sort Deck* (HBQD, Craik, Lampert and Nelson, 1996) item set was used in the present study for the investigation of the dimensions of humor. Craik et al. (1996) collected specific forms of everyday humorous conduct from an act frequency perspective and from a survey of the

theoretical and empirical psychological research literature on humor. They arrived at a set of 100 non-redundant statements and searched for coherent themes within the statements. A principal component analysis yielded five bipolar factors, namely *socially warm versus cold*, *competent versus inept*, *earthy versus repressed*, *reflective versus boorish*, and *benign versus mean-spirited* humor. The intercorrelations between the scales ranged from $r = .08$ (*reflective* vs. *boorish* and *competent* vs. *inept*) to $r = .30$ (*socially warm* vs. *cold* and *competent* vs. *inept*; $Mdn = .14$). The statements were used to create the *Humorous Behavior Q-Sort Deck* (HBQD), a self-report instrument using 100 items, that allows assessing the five bipolar scales.

However, earlier studies pointed at some problems with the findings of Craik et al. (1996). First, the dimensions are not independent of each other. Correlations of .30 (*socially warm* vs. *cold* and *competent* vs. *inept*, Craik et al., 1996) indicate a high amount of common variance. Second, the bipolarity of the styles is not given for all pairs of styles. For example, Ruch, Beermann and Proyer (2009), Ruch et al. (2011), and Müller and Ruch (2011) demonstrated that *mean-spirited humor* was higher correlated with *earthy humor* than with *benign humor*, and *competent humor* was higher correlated with *socially warm* and *cold humor* than with *inept humor*. For this reason, Müller and Ruch (2011) analyzed item parcels to keep the meaning of the factors but rotated them to the Oblimin criterion to allow them to correlate.

To find a more robust factor structure than the one found in Craik et al. (1996) Kirsh and Kuiper (2003) investigated a revised version of the HBQD with 60 items (only the ones with the highest loadings on the respective factor were used) in which a rating scale was used instead of the Q-Sort technique. They found seven unipolar factors. The first factor was *socially warm/general sense of humor*. High scorers demonstrate confidence in their ability to generate humor in a spontaneous, rather effortless fashion in social situations. The second

factor, *boorish humor*, involves a strong element of social rejection. This type of humor has a limited range of acceptance in many social situations due to its vulgar and grotesque content. The third factor, *inept humor*, describes a person who has a difficult time communicating humorous anecdotes and laughs indiscriminately at humorous remarks. A person using *deliberate humor* (fourth factor) is aware of the beneficial social effects of generating humorous remarks and uses this to personal advantage in gaining approval from others. The fifth factor, *intellectual humor*, refers to an enjoyment of challenging humorous dialogue, such as witticisms and puns. While *deliberate and intellectual humor* are neutral humor styles, Kirsh and Kuiper (2003) describe *mean-spirited humor* (sixth factor) as a negative style as it involves the generation of humor at the expense of others. Finally, *socially compensatory humor* (seventh factor) is also described as a negative humor style. This humor is sarcastic and entails poking fun at others. The factors found in the study by Kirsh and Kuiper (2003) differed from the original HBQD. The bipolarity was not replicated even though they used those six items with the highest positive and the six with the highest negative loadings for each factor. However, even though some problems with the HBQD occurred, it is still the most comprehensive conceptualization of humor so far.

The first aim of the present study was to examine the dimensions of humorous behavior found by Craik et al. (1996). The authors did use the Q-sort technique due to the high social desirability of self-report humor instruments, since it diminishes social desirability of the response conduct due to the restricted answer format. However, the Q-sort technique in the HBQD might lead to biased results: It does not allow for the comparison of individual scores but only profiles can be compared. Abandoning the restrictions of a Q-sort technique should bring the advantage to allow seeing which of the behaviors covary. Therefore, in this study a rating form of the HBQD (HBQ-Rating Form) was used (see also Kirsh & Kuiper, 2003; Ruch et al., 2009). Based on earlier studies we expected that the bipolarity of the

factors would not be replicated since studies investigating the HBQD reported problems with the bipolarity and Kirsh and Kuiper (2003) did not find any bipolar factors even if they only used the marker items of each pole. Further, since some of the styles are highly intercorrelated, we expect that *reflective* and *benign humor* do load on the same factor, as well as *competent* and *socially warm humor* will be integrated in one joint factor.

One common characteristic of previous studies, investigating the structure of humor, was that they only used self-ratings to describe humor and therefore rely on only one data source. However, to understand the structure of humor fully, it is necessary to investigate not only self-ratings but also peer-ratings. The inclusion of self- and peer-ratings in the present study is an important contribution to the literature since the peer-ratings strengthen the validity of the proposed structure of the humor dimensions and it helps eliminating a potential method bias. Further, Ruch et al. (2011) showed in their study that the inclusion of peer-ratings brings a useful contribution in the way that humorous behavior is not necessarily perceived the way the actor has intended. They highlighted problems when using peer-ratings: The convergence between self- and peer-rated humorous behavior turned out to be low for *reflective vs. boorish* and for *benign vs. mean-spirited*. Furthermore, while the peer-rating in *benign vs. mean-spirited humor* style correlated with the self-rating, it correlated stronger with the self-rating of *earthy vs. repressed*. Thus, the peers tended to look at the self-ascribed mean-spirited humor as earthy and regarded the benign humor additionally as repressed.

The second aim of this study was to also take peer-ratings into account to see whether self- and peer-rated humorous behaviors share the same underlying dimensions. It was expected that the structure of self- and peer-rated humorous behavior was convergent since the correlational pattern of self- and peer-rated HBQD data indicate a convergence (Ruch et al. (2011). To compare the equivalence of the proposed factor structure of the self- and peer-

rated factors, Tucker's phi coefficients were computed. A high convergence would further support the robustness of the structure of the dimensions.

To investigate the underlying dimensions of a construct, factor analysis is the method of choice. Factor analytical approaches allow examining the structure in the data. Usually the procedure develops from the bottom-up, starting with individual elements, which are grouped into clusters (such as the "g factor" for general intelligence; De Raad, 2009). The development of hierarchical factor structures from the top down allows testing the correlations between factors from different levels of extraction. It enables investigators to develop hierarchical representations (Goldberg, 2006). In this approach, the analysis starts at the top by extracting one first unrotated principal component, and in a second step, two varimax-rotated components are extracted and so forth. Then the factor scores of the first factor are correlated with the factor scores of the two factors of the second step and so forth. Goldberg suggests stopping when the loadings in the new factor are lower than those retained for the previous components. Another criterion is to stop when no relevant loadings occur in the new factor. However, the interpretability of the factor is still the most important criteria. In the present study we are interested in the emergence of the factors, the interpretation and comparison of self- and peer-rated factors.

The present study expands the existing literature by not only investigating the structure, but also testing the associations of the factors with existing humor scales. To test where in the factor space current measures are located it is necessary to consider several methods (i.e., self-report and performance tests) and different humor concepts: The temperamental basis of humor (Ruch, Köhler & van Thriel, 1996), measured by the *State-Trait-Cheerfulness Inventory* (STCI-T<30>; Ruch, et al., 1996) in self- and peer-reports, functional and dysfunctional humor styles measured by the *Humor Styles Questionnaire* (HSQ; Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). A new self-report questionnaire

was developed for this study in order to investigate the eight comic styles described by Schmidt-Hidding (1963). He posits a differentiated linguistic model of humor. These humor styles take into account the historical view on humor, in which *humor* is a part of the comic besides other elements such as *sarcasm*, *irony*, *wit*, *cynicism*, *nonsense*, *fun*, and *satire* (for an overview see Ruch, 2008). The eight humor styles were characterized by seven qualities, namely the goal, the subject of humor, the actor's attitude, his behavior towards others, the ideal audience, the method, and the linguistic singularity of the humor style. The inclusion of a linguistic approach in a psychological setting brings a new perspective in humor research and was therefore assessed in the present study as well. These descriptions of the eight comic styles were taken for the item construction of the *Comic Styles Questionnaire* (CSQ), which was assessed in peer-ratings as well.

Finally, *gelotophobia* (the fear of being laughed at) covers humorless aspects of humor, since humorlessness must be considered as well for a complete picture of humor. Additionally, the related concepts *gelotophilia* (the joy of being laughed at) and *katagelasticism* (the joy of laughing at others) were assessed with the PhoPhiKat<30> (Ruch & Proyer, 2009).

Humor is most frequently investigated by using self-report measurement scales. Only few performance tests assess humor appreciation and humor production. However, to get a complete picture of humor, it is important to consider performance tests as well, this will also lead to a higher methodological variance. For humor appreciation the *3 Witz-Dimensionen humor test* (Ruch, 1983; Ruch, 1992) was used in this study. It assesses the appreciation and aversiveness of jokes and cartoons of the three categories *incongruence resolution*, *nonsense*, and *sex*. To measure humor performance, the *Cartoon punch line production test* (CPPT, Köhler & Ruch, 1993) was used. In this test, subjects receive caption-removed cartoons and

they have to write as many punch lines as possible for each cartoon. Both tests received support in literature and were therefore used in this study.

We know from research that humor and personality share common variance. Extraversion predicts some humorous behavior (i.e., *affiliative humor*, *cheerfulness*, the enjoyment of entertaining others; see Ruch, 1994a, b; Ruch & Deckers, 1993; Martin et al., 2003). Martin et al. (2003) found relations between all of the four humor styles of the HSQ and the Big Five. However, humor and personality are not redundant. To localize the humor dimensions in personality and test the distinctiveness, we also assessed the Big Five personality factors with the *Big Five Inventory (BFI)* (John, Donahue, & Kentle, 1991).

Aim of the study

The aim of the present study was threefold: 1) to test in a factor analytical analysis whether the factors in this study are equivalent to those in Craik et al. (1996) or those in Kirsh and Kuiper (2003), 2) to compare the hierarchical emergence of self- and peer-rated factors, and 3) to correlate the derived factor scores with existing humor conceptualizations and personality to test their overlap.

Method

Participants.

Self-rating. The sample consisted of $N = 516$ participants; 35.1% were males and 64.9% were females. The mean age of the participants was 34.03 ($SD = 13.97$) and ranged from 17 to 74 years. The sample was highly educated; 21.5% held a degree from a university or a college of higher education, 36.2% finished high school, 36.6% had an apprenticeship, 2.9% finished compulsory school, and 0.6% did not finish compulsory school. Each participant was asked to invite a friend/family member to complete the peer rating (46.7%).

Peer-rating. The peer rating sample consisted of $N = 241$ participants; 39.7% were males and 60.3% were females. The mean age of the participants was 35.96 ($SD = 14.86$) and

ranged from 18 to 81 years. About one third of the peer-rater were married or in a romantic partnership with the rated person (34.3%), 31.4% were relatives, 30.5% belonged to the closer family (i.e., parents, siblings, children), 2.9% were colleagues at work and only 0.8% friends. The peer-rater provided ratings on how long they knew the target person ($M = 18.80$ years; range from 1.00 – 72.00 years; two of them knew the target person less than one year).

Measures. The Humorous Behavior Q-Rating Form (HBQD, Craik et al., 1996), a 100-item questionnaire for the measurement of humor-related behaviors or behavior tendencies, was used in the German version (Müller & Ruch, 2011). While the English version of the HBQ Rating Form utilizes a nine-step scale, in the German version a seven-point answer format is used (see Ruch et al., (2009) ranging from 1 = “*least characteristic*” to 7 = “*most characteristic*”. A sample item is: “Maintains group morale through humor.” Since the item wording of the HBQD is usable for self- and peer-ratings, only the instruction was changed for the peer-ratings.

The Humor Styles Questionnaire (HSQ; Martin et al., 2003) used in a German version as by Ruch et al. (2009), is a 32-items self-report questionnaire with a seven-point answer format (“*totally disagree*” = 1 to “*totally agree*” = 7). It assesses four unipolar humor styles, namely *self-enhancing* (“If I am feeling depressed, I can usually cheer myself up with humor”), *affiliative* (“I laugh and joke a lot with my closest friends”), *aggressive* (“If someone makes a mistake, I will often tease them about it”) and *self-defeating* humor (“I often go overboard in putting myself down when I am making jokes or trying to be funny”). The HSQ is widely used in humor research and the alpha-coefficients in this sample were in the expected range (Martin et al., 2003; Ruch, et al., 2009, Kirsh & Kuiper, 2003): .83 (*affiliative humor*), .79 (*self-enhancing humor*), .69 (*aggressive humor*), and .78 (*self-defeating humor*).

The State-Trait-Cheerfulness Inventory (STCI-T<30>; Ruch et al., 1996) is a 30-item questionnaire with a four-point answer format (1 = “*strongly disagree*” to 4 = “*strongly agree*”) for the assessment of the temperamental basis of humor, namely *cheerfulness* (“I am in a mirthful mood”), *seriousness* (“I am in a thoughtful mood”), and *bad mood* (“I am in a bad mood”) as enduring traits. For peer ratings, a peer-report form of the STCI-T<30> was used in this study. The STCI-T<30> is widely used in research and shows good psychometric properties. Alpha-coefficients in the present self-rating sample were .89 (*cheerfulness*), .76 (*seriousness*), and .90 (*bad mood*; peer-rating: .90, .80, and .93; respectively) and were comparable to earlier findings (Ruch, et al, 1996).

The PhoPhiKat-30 (Ruch & Proyer, 2009) is a 30-item questionnaire utilizing a four-point answer format (1 = “*strongly disagree*” to 4 = “*strongly agree*”) for the measurement of the degree of *gelotophobia* (“When they laugh in my presence I get suspicious”), *gelotophilia* (“I seek situations in everyday life, in which I can make other people laugh at me”), and *katagelasticism* (“I like to compromise other persons and enjoy when they get laughed at”). The PhoPhiKat-30 is widely used in research and shows good psychometric properties. Alpha-coefficients in the present sample were comparable to earlier findings: *gelotophilia* = .80, *gelotophobia* = .81, and *katagelasticism* = .83.

The Comic Styles Questionnaire (CSQ) is a self-report measurement tool developed for this study. It measures the eight comic styles defined by Schmidt-Hidding (1963) namely *humor*, *wit*, *irony*, *satire*, *fun*, *nonsense*, *sarcasm*, and *cynicism*. In the first part, participants have to rank order the eight comic styles in the order of 1 = “*describes me best*” to 8 = “*describes me least*”. In the second part participants have to rate how often they would use each comic style in a typical week (1 = “*never*” to 5 = “*very often*”). The scores of the first and the second part were averaged to a total score. For the peer ratings, the instruction and the

answer format for both part was changed to third person singular (1 = “*describes him/her best*” to 8 = “*describes him/her least*”).

The 3 Witz Dimensionen Test (3WD; Ruch, 1983) assesses appreciation of nine jokes and cartoons of the three humor categories of *incongruity-resolution (INC-RES)* humor, *nonsense (NON)* humor, and *sexual (SEX)* humor. These jokes and cartoons are rated for “funniness” and “aversiveness” using two seven-point scales from “*not funny*”/“*not aversive*” (= 0) to “*very funny*”/“*very aversive*” (=6). Six scores can be derived, three for funniness and three for aversiveness of the three categories. Total scores for funniness and aversiveness are computed.

The Cartoon Punchline Production Test (CPPT; Köhler & Ruch, 1993) contains six caption-removed cartoons of the three humor categories, incongruity resolution (INC-RES), nonsense (NON), and sexual (SEX) humor (two each), and the subjects have to create as many punch lines as they are able to. In this study, only four cartoons were used. It was permissible to skip cartoons in case nothing came to one’s mind. As in Ruch et al. (2009) there was no time limit for providing the answers. The *total number of punch lines* (NP) created forms the CPPT NP score (quantity of humor creation). A second fluency score refers to the *number of cartoons* (NC) *for which a punch line was written* (CPPT NC).

Additionally, the CPPT also allows ratings for the quality/originality of the punch lines. These ratings were provided by a group of 32 adults; i.e., each punch line was rated by four raters. The punch lines were aggregated in eight sets. Each set involved the punch lines of 45 participants. The sets were assigned to the raters according to the following rational: Each set was rated by three females and one male, two of them were students, and two were raters without any academic background. They worked independently from each other at their own pace and without time restrictions. For each person, they first selected the best punch line for each cartoon and rated its quality on a 10-point Likert-scale from 1 = “*not at all*

witty” to 10 = “*extremely witty*” (CPPT WP), and its originality (1 = “*not inventive at all*” to 10 = “*extremely inventive*”; CPPT OR).

Furthermore, a seven-point Likert-scale from 0 = “*not witty at all*” to 6 = “*extremely witty*” was used to indicate how marked the wit (WI) of the creator of the punch lines is (CPPT WI). In order to see the convergence of raters for the three variables, the Cronbach alpha was computed for each cartoon of each set. Cartoons with alphas < .40 were excluded for the further analysis (i.e., the ratings of six cartoons were excluded from the analysis). For the remaining cartoons the alphas for WP were .55 (range from .41 to .72 with a median of .53), for OR .57 (range from .42 to .74 with a median of .58), and for WI .59 (range from .50 to .69 with a median of .58). These coefficients were lower than those found in earlier studies (Köhler & Ruch, 1993; Ruch et al., 2009).

The Big Five Inventory (BFI; John & Donahue, & Kentle, 1991) was used in its German version (Lang, Lüdke & Asendorpf, 2001). It is a 44-item self-report questionnaire with a five-point answer format for the assessment of the Big Five personality factors *extraversion* (8 items; e.g. “Is talkative”), *agreeableness* (9 items; e.g. “Is helpful and unselfish with others”), *conscientiousness* (9 items; e.g. “Makes plans and follows through with them”), *openness to experience* (10 items; e.g. “Likes to reflect, play with ideas”), and *neuroticism* (8 items; e.g. “Worries a lot”). The BFI is widely used in research and has good psychometric properties. Alpha coefficients for the present sample ranged from .73 (*agreeableness*) to .89 (*extraversion*) with a median of .80.

Procedure.

Data collection. Participants completed all instruments in an online study. The website was hosted by the University of Zurich. They were recruited via newspaper reports and flyers where the link to the study was added. Participants were asked to provide a peer rater who filled in the questionnaires for the peer-ratings online. The peer-ratings were

anonymous; participants did not get feedback about the ratings of the peer. They were not paid for their service, however, if all of the questionnaires were filled in (including peer-ratings), participants received a feedback on their results and were included in a drawing of vouchers. Self- and peer-ratings were matched by a personal code. The anonymity of the participants was granted. Of those participants who started and filled in the demographics, 40.2% finished the whole survey. The HBQD was the first questionnaire after the demographics. For the present study, those participants that completed the HBQD fully were taken for the data set (65.7%).

Results

Descriptive statistics. Descriptive statistics for all the scales that entered the study were computed. Means and standard deviations were comparable to earlier studies. The alpha coefficients were satisfying for all measured variables. Skewness and kurtosis indicated that all variables were normally distributed; except for the scores of the HSQ affiliative humor, which showed a leptokurtic distribution ($Sk = -1.16$ and $K = 2.09$). Nevertheless, as the deviation was small and due to the large sample size the variables were treated as normally distributed.

Principal component analysis. To prevent an under- and over-factorizing, multiple criteria were used to decide how many factors to retain. Eigenvalues, scree test, and parallel analysis were used to determine the number of factors that had to be extracted. As second criteria, a factor was chosen to be relevant if five or more loadings were higher than .60, or ten or more loadings were higher than .40 (Bortz, 2005). In a last step, factor interpretability was taken for a criterion as well.

Principal component analysis of the HBQD self-rating data. A principal component analysis using the 100 HBQD items was computed for the self-ratings. The Bartlett test of sphericity indicated that the variables fit the conditions for computing a PCA ($p < .000$). The

PCA yielded a substantial first factor that accounted for 13.3% of the variance, reflecting individual differences in humorous behavior. The Eigenvalues showed that 26 factors exceeded unity. The scree test suggested the retention of three or seven factors. A parallel analysis of random data (Horn, 1965) showed, that for the self-rated data the first six Eigenvalues were greater than chance. In the present data, Eigenvalues 1-8 were as followed: 13.43, 9.17, 4.73, 3.48, 2.89, 2.46, 1.92, and 1.88. These first analyses indicated that a maximum of seven factors was needed to explain the data. In a further step, we examined the hierarchical structure for one through eight factor solutions using the procedure proposed by Goldberg (2006). The factor scores were saved for each solution. Next, correlations between factor scores at adjacent levels were computed. The resulting hierarchical structure is displayed in Figure 2.

Most of the eight factors, which explained 40.0% of variance, were interpretable. However, new factors emerging from the solution of five to eight factors lost substance showing only few items with substantial loadings on the respective factor. Until level four of the analysis, the retained factors fit all of the criteria. The four-factor solution, explaining 30.81% of the variance, was preferred, because the new factors of the solutions five to eight did not fit two of the criteria (i.e., five or more loadings $> .60$, ten or more loadings $> .40$). Table 6 shows the marker items for the four-factor solution.

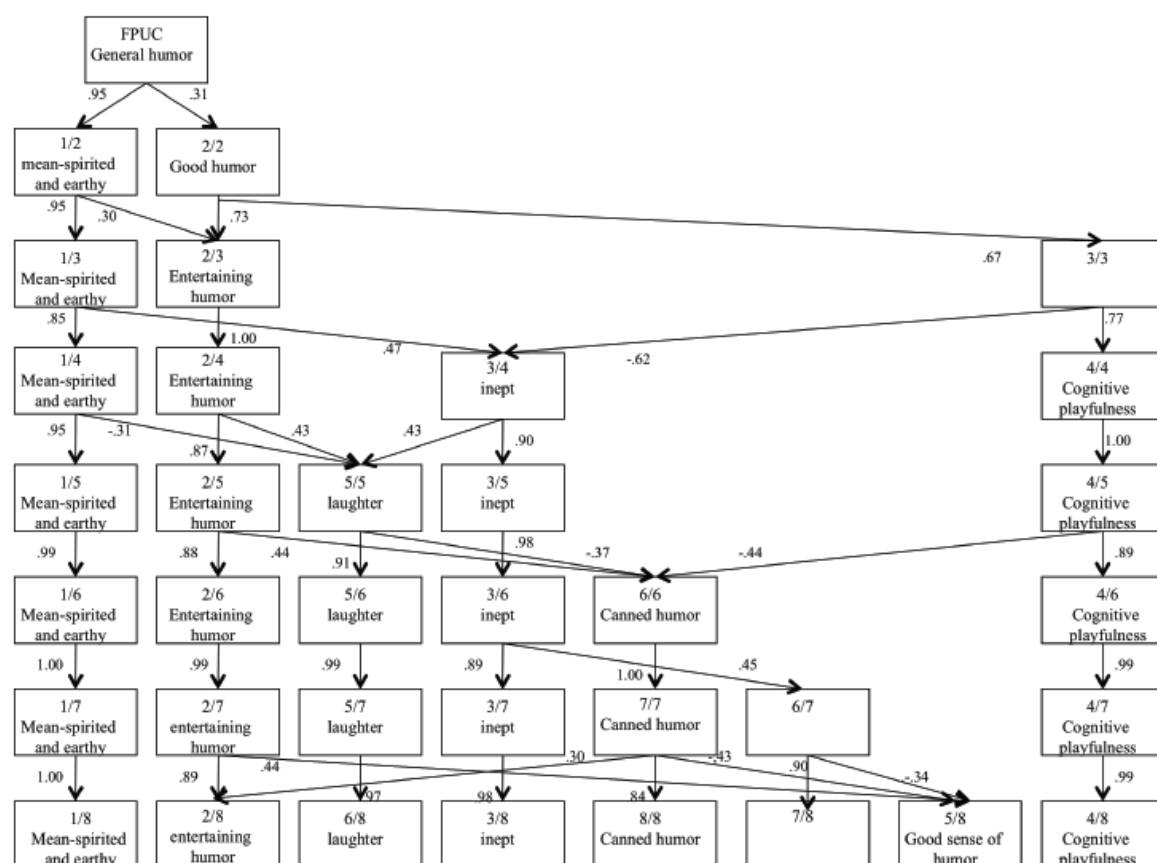


Figure 2. Varimax-rotated Principal Components Derived From Self-Rated HBQD Items.

The figure begins with the first unrotated principal component (FUPC) and displays the emergence of the factors from level 1 to 8. Text within each box indicates the label of the factor. Numbers within boxes indicate the number of factors extracted for a given level. Correlation coefficients are given for correlations $> .30$.

Table 6 shows the marker items of the four-factor solution. Factor 1/4 accounted for 9.6% of variance and yielded 22 positive loadings higher than .40. Two items had high secondary loadings (loadings > .40 on one of the other factors; i.e., item 14: *Tells bawdy stories with gusto, regardless of audience*, .44 on factor 2/4 [.53 on factor 1/4]; item 25: *Uses humor to challenge social expectations and proprieties*, .43 on factor 4/4 [.40 on factor 1/4]. Of the relevant items, the majority came from the earthy and mean-spirited styles of the HBOD. The items were grouped to facilitate the interpretation of the factor. Item contents

referred to humor against a victim (i.e., a group or a person), earthy humor, cruel, macabre humor, and showing an inappropriate smile. The latter referred to the way a person reacts to humor and not to humor in its narrow sense. A person that scores high on this factor could be best described as someone who uses disparaging humor, who likes macabre and bathroom humor. Therefore, this factor was tentatively labeled *earthy and mean-spirited humor*.

Factor 2/4 accounted for 8.46% of variance and had 21 relevant loadings of which two had negative loadings (item, 38: Is a ready audience, but infrequent contributor of humorous anecdotes [-.48], and item 70: Is droll [-.50]). Only item 14 (Tells bawdy stories with gusto, regardless of audience) yielded a secondary loading on factor 1/4 (.53 [.44 on factor 2/4]). The majority of the items came from the socially warm style (12 items). The 22 items were grouped with regard to content: likes to tell funny stories, good sense of humor, uses behavioral and vocal elements to support the humorous effect, uses humor to facilitate social relationship, shows hearty laughter, plays a clown, practical joker, and likes imitating other persons. A high scorer on this factor could best be described as someone who likes to tell funny stories and knows how to support the funny effect with voice and gesture. With his or her good sense of humor and hearty laughter he or she facilitates social relationships and knows how to entertain others with humor, not only by telling funny stories, but also by imitating others, telling jokes or playing the clown. Therefore, this factor was tentatively labeled *entertaining humor*.

Table 6

*Marker Items for the Four-factor Solution for the Self- and Peer- Rated HBQD**Items*

Factor	Item Text	Style	Loading
S	50 Makes jokes about the macabre and the grotesque	7	.68
	22 Has a salty sense of humor.	5	.67
	7 Occasionally makes humorous remarks betraying a streak of cruelty.	7	.66
	77 Has a reputation for indulging in coarse or vulgar humor.	10	.65
	35 Delights in parodies which others might find blasphemous or obscene.	7	.64
	40 Jokes about others imperfections.	10	.62
P	50 Makes jokes about the macabre and the grotesque.	7	.74
	77 Has a reputation for indulging in coarse or vulgar humor.	7	.74
	35 Delights in parodies which others might find blasphemous or obscene.	7	.69
		10	
	57 Is sarcastic.	7	.68
	73 Relishes scatological anecdotes (bathroom humor).	10	.65
	7 Occasionally makes humorous remarks betraying a streak of cruelty.	10	.65
	97 Pokes fun at the naive or unsophisticated.	5	.65
S	22 Has a salty sense of humor.		.64
	29 Employs animated facial expressions for humorous effect.	1	.62
	61 Enjoys telling humorous stories in dialect.	1	.61
P	72 Has a reputation as a practical joker.	4	.60
	72 Has a reputation as a practical joker.	4	.61
	91 Maintains group morale through humor.	1	.61
	23 Tells funny stories to impress people.	4	.61
	65 Plays the clown.	1	.61

(Table continues)

Table 6 (continued)

Factor	Item Text	Style	Loading
S	46 Habitually covers anxiety with a nervous snicker.	6	.68
	47 Reacts in an exaggerated way to mildly humorous comments.	6	.59
		6	.55
	90 Spoils jokes by laughing before finishing them.	6	.51
	84 Laughs without discriminating between more and less clever remarks.	6	.50
	76 Becomes humorous when uncomfortable or ill at ease.		
P	52 Responds with a quick, but short-lived smile.	2	.59
	48 Misinterprets the intent of others good-natured kidding.	2	.58
	26 Smiles grudgingly.	2	.58
	18 Has a good sense of humor.	1	-.56
	68 Crushed when humorous efforts meet with less than enthusiastic reception.	6	.56
	46 Habitually covers anxiety with a nervous snicker.	6	.52
	41 Smiles inappropriately.	2	.50
	76 Becomes humorous when uncomfortable or ill at ease.	10	.50
S	83 Uses humor to express the contradictory aspects of everyday events.	3	.65
		9	.55
	21 Finds intellectual word play enjoyable.	9	.50
	33 Enjoys witticisms, which are intellectually challenging.		
P	83 Uses humor to express the contradictory aspects of everyday events.	3	.64
		9	.63
	33 Enjoys witticisms, which are intellectually challenging.	9	.60
	21 Finds intellectual word play enjoyable.		

Note. S = Self-rating, P = Peer-rating, Style = original HBQD style. 1 = socially warm, 2 = socially cold, 3 = reflective, 4 = boorish, 5 = competent, 6 = inept, 7 = earthy, 8 = repressed, 9 = benign, 10 = mean-spirited. Items with loadings > .60 are displayed. If only few items of a factor did meet the criteria, items with loadings > .50 are displayed.

Factor 3/4 accounted for 7.04% of variance and contained of 12 items with relevant loadings, none of which yielded secondary loadings on other factors. All except for one of the inept items of the initial HBQD styles loaded on this factor (7 items). The item contents were: indiscriminate laughter, need to be funny, humor to cover uncertainty, repressed humor, and an item dealing with *gelotophobia*. Humor in this factor does not refer to the content but to the expression of humor in social situations. However, the person does not feel comfortable, which is expressed in humor or laughter or in the interpretation of humor of others. He or she always has their counterpart in mind, thinking how they could react or what they think about him or her. This thinking influences his or her humorous behavior. This factor was labeled *inept humor*.

Factor 4/4 accounted for 5.57% of variance and showed 14 items with relevant, positive loadings. One of the items (25: *Uses humor to challenge social expectations and proprieties*) had a secondary loading on factor 1/4 (.43 [.42 on factor 4/4]). The items of factor 4/4 came mainly from the reflective humor style (10 items). Items loading on this factor were grouped as followed: humor in everyday life, humor as a world-view, verbal humor, and spontaneous humor. A high scorer on this factor can be described as a person who likes puns and intellectual joke work, has a spontaneous humor, and uses humor to express contradictory aspects of live. This factor was labeled *cognitive playfulness*.

Analysis of the not covered items. Six items of the 100 remained, which were not covered by the four factors at all (i.e., loadings < .30; communalities ranged from .07 (item 64) to .17 (item 93) with a median of .12). Three of them were from the benign humor style, two of the boorish and one of the reflective. The remaining 22 items showed loadings between .30 and .40, the communalities ranged from .13 (item 9) to .32 (item 26) with a median of .23. While the items from the socially warm, competent, and earthy humor style

showed all relevant loadings on one of the four factors, only few items of benign, repressed and socially cold humor style were explained properly by the factors.

The steps five to nine of the hierarchical factor analysis were investigated in more detail to see whether the items were better explained by extracting more than four factors. If five factors were extracted, five items remained with loadings $< .30$ (i.e., item 2: *Has a sense of humor reflecting its regional or cultural origins*; item 9: *Is bored by slapstick comedy*; item 39: *Enjoys limericks and nonsense rhymes*, item 64: *Enjoys the routines of stand-up comedians*, and item 93: *Does not hesitate to repeat a remark, which was not fully appreciated*). There remained 18 items with loadings between $.30$ and $.40$. Until step eight of the analysis, the non-explained items became fewer in each step. However, in the nine-factor solution, the items that could not be explained raised again to the number of five (from two in step eight)¹.

Factor analysis of the HBQD peer rating data. The same procedure was conducted with the peer-rating data. A principal component analysis using the 100 HBQD peer-rated items was computed. The Bartlett test of sphericity indicated that the variables fit the conditions for computing a PCA ($p < .001$). A closer look at the Eigenvalues showed that 28 factors exceeded unity. The scree test suggested the retention of three factors. The parallel analysis (Horn, 1965) showed that seven Eigenvalues exceeded the random numbers (Eigenvalues 1-9: 13.09, 10.50, 4.88, 3.70, 3.09, 2.64, 2.48, 2.05, 1.92). Again, we decided to extract all solutions with one up to eight factors, each extraction followed by Varimax

¹ The first four factors of the eight factor solutions did fit all of the criteria: factor 1/8 showed 20 items with loadings $> .40$ (one negative), factor 2/8 showed 18 items of which two had negative loadings, factor 3/8 had 14 items (all positive), and factor 4/8 showed 11 items with loadings $> .40$ (all positive). Factor 5/8 (*skilled humor, good sense of humor*) and 6/8 (*easily laughter*) showed only seven relevant items, factor 7/8 had only two of them and factor 8/8 only three. Factors 7/8 and 8/8 were not interpretable. Interestingly all of the skilled humor, good sense of humor items of factor 2/4 split into a separate factor 5/8. Factor 1/8 and 4/8 stayed approximately the same. In factor 3/8 a new component arises in which humor is a mean to separate from others, to keep others in distance (items 66, 94).

rotation. Next, correlations between factor scores at adjacent levels were computed. The resulting hierarchical structure of the peer-rating is displayed in Figure 3.

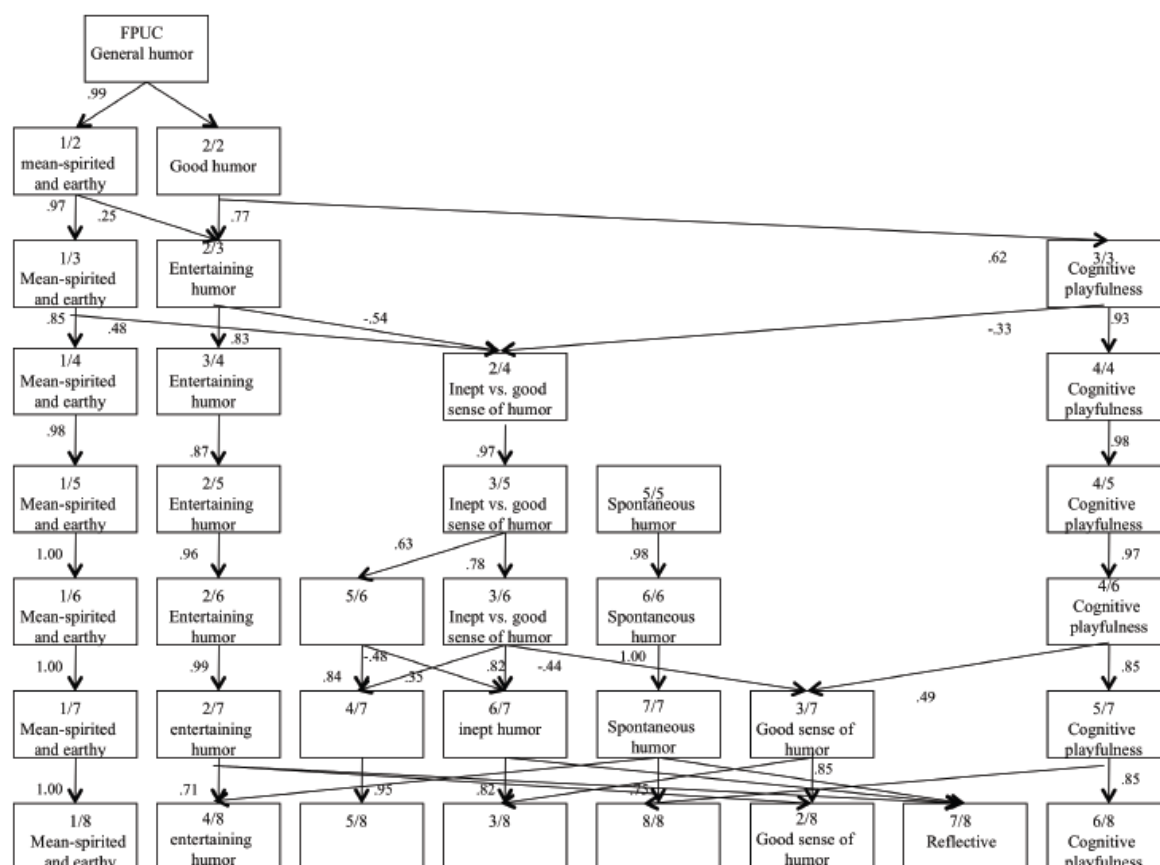


Figure 3. Varimax-rotated Principal Components Derived From Peer-Rated HBQD Items.

The figure begins with the first unrotated principal component (FUPC) and displays the emergence of the factors from level 1 to 8. Text within each box indicates the label of the factor. Numbers within boxes indicate the number of factors extracted for a given level. Correlation coefficients are given for correlations $> .30$.

For determining the number of factors, the same criteria were used in the peer ratings as for the self-ratings. As in the self-ratings, in peer-rated humorous behavior the factors fit all of the criteria until step four of the analysis. To examine the congruence between the self- and peer-rated factors, Tucker's phi coefficients were computed for the factors of each step.

According to Ten Berge (1986) coefficients higher than .85 indicate factorial invariance. The congruency for factor 1/4 of the self- and peer-ratings and factor 2/4 of the self-rating with factor 3/4 of the peer-ratings was high ($p_{1/1} = .91$, $p_{2/3} = .93$). The coefficient for factor 4/4 of the self- and peer-rating was still indicating a factorial invariance ($p_{4/4} = .86$). For this reason, factor 1/4, 3/4 and 4/4 of the peer rating were labeled the same as in the self-ratings.

However, the comparison of factor 3/4 of the self-ratings with factor 2/4 of the peer-ratings indicated an incongruity between the respective factors ($p_{3/2} = .75$).

In a next step, the item content of factor 2/3 was analyzed. This was a bipolar factor, since five of the 21 items with relevant loadings showed negative loadings. The majority of the items (9 items) came from the *socially cold* HBQD style, while six were *inept* items. Of those items with negative loadings four were from the *socially warm* HBQD style. In line with the interpretation of the factor for the self-rating it covered contents like indiscriminate laughter, inappropriate smiling, humor to cover uncertainty, repressed humor, and an item dealing with *gelotophobia*. Additionally, there was content discriminating from the self-rating: Good sense of humor, and humor in everyday life. While the content of the positive pole of this factor was similar to the *inept humor* in the self-rating, the negative pole was characterized by the opposite, namely a good sense of humor. This factor was therefore tentatively labeled *inept vs. good sense of humor*.

Correlations with humor scales. In a next step, correlation coefficients between the four factors, the humor scales, and personality were computed. One might expect that the factor of *mean-spirited and earthy humor* shows relations to humor styles with a disparaging or aggressive meaning as well as *hostile humor*, *sarcasm* and *cynicism*. Further, we expected a robust positive relation between *entertaining humor* and social humor styles as we find it in *cheerfulness*, *affiliative humor*, *fun*, and *gelotophilia*. *Gelotophobia* expresses a dysfunctional relation to humor and should, therefore, be robustly correlated to *inept humor*. Finally, we

expected a positive relation between *cognitive playfulness* and *wit*, and *humor*, the cognitive humor styles.

Table 7

Correlations Between Self- and Peer-Rated Factors of the Four Factor Solution and Self-Rated Humor Scales and Personality

Scales	Earthy and mean-spirited humor		Entertaining humor		Inept humor		Cognitive playfulness	
	S	P	S	P	S	P	S	P
STCI-T								
CH	-.24**	.09	.63***	.36**	-.12	-.28*	.15	.01
SE	-.16	-.27*	-.19**	-.15	.02	.22	.01	-.02
BM	.23**	-.01	-.39***	-.13	.27***	.34**	-.04	-.05
HSQ								
Affiliative	-.03	.18	.63***	.38***	-.22**	-.30**	.30***	.03
Self enh.	-.12	.05	.41***	.21	-.07	-.16	.32***	.10
Aggressive	.60***	.35**	.10	.11	.07	-.02	.04	-.08
Self def.	.35***	.15	.15	.16	.30***	.09	.06	-.17
PhoPhiKat								
Pho	.14	-.01	-.34***	-.15	.44***	.28**	-.14	-.22
Phi	.27**	.21	.46***	.31**	-.04	-.17	.21**	.07
Kat	.66***	.47***	.13	.11	.10	.01	.07	.04
CSQ								
Humor	-.23*	-.23	-.02	.05	-.12	.02	.15	.07
Wit	.16	.20	-.08	.01	-.03	.13	.21	.28*

(Table continues)

Table 7 (continued)

Scales	Earthy and mean-spirited humor		Entertaining humor		Inept humor		Cognitive playfulness	
	S	P	S	P	S	P	S	P
Irony	.30**	.25	-.17	.01	.07	.08	.12	-.03
Satire	.20	.15	-.11	-.08	.03	.11	.20	.02
Fun	-.09	.04	.32***	.20	.06	-.13	-.03	-.08
Nonsense	-.07	-.04	.16	.08	-.11	-.14	.07	.12
Sarcasm	.39***	.26	-.03	.06	.09	-.03	-.10	.06
Cynicism	.35***	.22	-.01	-.02	.12	.02	-.11	.00
3WD								
Funniness								
INC-RES	-.23*	-.06	.05	-.03	-.03	.06	.04	.03
Nonsense	.00	.02	.14	.05	.06	-.10	-.00	-.03
Sex	.16	.16	.22*	.10	.17	-.01	-.04	-.13
Aversive								
INC-RES	.13	.13	.12	.09	.07	-.02	-.13	-.11
Nonsense	-.08	-.09	-.00	.02	.00	.13	-.10	-.07
Sex	-.17	-.14	-.05	-.10	-.01	.14	.04	.01
CPPT								
WP	.11	.10	.03	.14	-.06	-.06	.18	.13
OR	.03	.04	-.03	.08	-.05	-.12	.21*	.11
NP	-.06	-.03	.07	.05	-.00	-.01	.14	.14
NC	.06	-.07	.14	.05	.01	-.04	-.01	.09

(Table continues)

Table 7 (continued)

Scales	Earthy and mean-spirited humor		Entertaining humor		Inept humor		Cognitive playfulness	
	S	P	S	P	S	P	S	P
BFI								
E	-.06	.13	.62***	.30**	-.28***	-.17	.11	-.04
A	-.44***	-.18	.31***	.05	-.12	-.18	.01	.05
C	-.33***	-.40**	.07	-.12	-.20*	.10	-.09	.11
O	.02	.03	.13	.22	-.21*	.05	.37***	.37**
N	.09	-.05	-.29***	-.15	.33***	.21	-.08	-.20

Note. N = 265 – 422. S = self-rating, P = peer-rating, STCI-T = State Trait Cheerfulness Inventory, trait version, CH = cheerfulness, SE = seriousness, BM = bad mood, HSQ = Humor Styles Questionnaire, Self enh. = self-enhancing, Self def. = self-defeating, PhoPhiKat = gelotophobia, gelotophilia, katagelasticism, Pho = gelotophobia, Phi = gelotophilia, Kat = katagelasticism, CSQ = Comic Styles Questionnaire, INC-RES = incongruity-resolution, CPPT = Cartoon Punch line Production Test, WP = wittiness of the punch lines, OR = inventiveness of punch lines NP = number of punch lines written, NC = number of cartoons completed, BFI = Big Five inventory, E = extraversion, A = agreeableness, C = conscientiousness, O = openness to experience, N = neuroticism.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 7 shows the correlations between the self-rated humor styles, personality and the self- and peer-rated factors of the four-factor solution. The significance levels were adjusted for multiple simultaneously performed correlation analyses (Bonferroni correction).

Results showed that all of the measured self-report humor scales could be well located in the model. As expected, *mean-spirited and earthy humor* was highly correlated with (listed in descending order of size of correlation coefficients): *katagelasticism, aggressive humor style, sarcasm, cynicism, self-defeating humor style, irony, gelotophilia, and bad mood*. *Humor and cheerfulness* were negatively correlated with this factor. Of the performance scales, only the funniness of *incongruity-resolution* jokes was negatively related to this factor. A multiple regression analysis with sex and age as predictors in step 1 (method: enter) and all

self-report scales as predictors (step 2: method stepwise) and *mean-spirited and earthy humor* as criterion for a global estimation of the relation showed that *katagelasticism*, *hostile humor* and *cynicism* were the best predictor of factor 1/4 ($\beta = .36, .29, .20$; $\Delta R^2 = .04$). Correlation coefficients for the peer-rated factor showed a similar correlation pattern. A main difference between the self- and peer-ratings was the negative relation with *seriousness* for the peer-ratings while the correlation was not significant in self-ratings. Further, no significant correlation with *bad mood* and *self-defeating humor* occurred in peer-ratings, while in self-ratings *cheerfulness* was positively and *seriousness* was negatively correlated to *mean-spirited and earthy humor*.

Cheerfulness, *affiliative*, *gelotophilia*, *self-enhancing*, and *fun* were positively related to *entertaining humor* (listed in descending order of the size of correlation coefficients) while *bad mood*, *gelotophobia*, and *seriousness* showed negative correlations. A multiple regression analysis with sex and age as predictors in step 1 (method: enter) and all self-report scales as predictors (step 2: method stepwise) and *entertaining humor* as criterion for a global estimation of the relation showed that *affiliative humor*, *cheerfulness*, and *self-defeating humor* were the best predictors of this factor ($\beta = .45, .34, .17$; $\Delta R^2 = .03$). Again the correlational pattern with the peer-rated factor was similar to the self-rating. However, *seriousness*, *bad mood*, *self-enhancing humor*, *gelotophobia*, and *fun* showed no significant correlations with *entertaining humor* (peer).

Gelotophobia, *self-defeating humor*, and *bad mood* and *affiliative humor* (negative) were positively correlated with factor 3/4 (*inept humor* in the self-rating). A multiple regression analysis with sex and age as predictors in step 1 (method: enter) and all self-report scales as predictors (step 2: method stepwise) and *inept humor* as criterion for a global estimation of the relation showed that *gelotophobia* was the best predictor of this factor ($\beta = .43$; $\Delta R^2 = .16$). The correlation pattern with the peer-rated factor was comparable with

the self-rated, even though the congruency between the factors was not given. As in the self-ratings, *bad mood* and *gelotophobia* were positively correlated with *inept vs. good sense of humor*, while *affiliative humor* and additionally *cheerfulness* were negatively correlated. Finally, *cognitive playfulness* was correlated with *self-enhancing humor*, *affiliative humor*, and *gelotophilia*. A multiple regression analysis with sex and age as predictors in step 1 (method: enter) and all self-report scales as predictors (step 2: method stepwise) and *cognitive playfulness* as criterion for a global estimation of the relation showed that *satire* and *self-enhancing humor* were the best predictor for *cognitive playfulness* ($\beta = .23, .22$; $\Delta R^2 = .05$).

Overall, the performance scales were only marginally represented in the model. The *origin* of the written punch lines in the CPPT was related to *cognitive playfulness*, the funniness of *sex* jokes was positively related to *entertaining humor*, while the funniness of *incongruity-resolution* jokes was negatively correlated with *earthy and mean-spirited humor*.

In a next step the correlations between the peer-rated humor scales and the self- and peer-rated factors were computed. Table 8 displays the correlations between the peer-rated humor styles and the factors of the four-factor solution. The significance levels were adjusted for multiple simultaneously performed correlation analysis (Bonferroni correction).

Table 8

Correlations Between Self- and Peer-Rated Factors of the Four Factor Solution and Peer-Rated STCI-T, and CSQ

Scales	Mean-spirited and earthy humor		Entertaining humor		Inept humor		Cognitive playfulness	
	S	P	S	P	S	P	S	P
STCI-T								
CH	-.18	.05	.39***	.44***	-.05	-.56**	.06	.12
SE	-.17	-.41***	-.21	-.15	-.02	.14	-.05	.16
BM	.09	.11	-.23	-.15	.15	.50**	-.06	-.07
CSQ								
Humor	-.23	-.29**	-.08	-.11	-.04	-.06	-.03	.21*
Wit	.21	.11	-.11	.03	-.09	.10	.07	.11
Irony	.13	.33**	.02	-.02	.09	.19	-.03	-.04
Satire	.20	.32**	-.09	-.06	.01	.09	.19	.13
Fun	-.12	-.11	.23	.19	-.09	-.22*	.01	-.03
Nonsense	-.01	.03	.19	.13	-.06	-.10	.19	.16
Sarcasm	.28*	.45***	-.14	-.07	.02	.21*	-.04	-.04
Cynicism	.28*	.37***	.07	.04	.05	.14	.09	-.06

Note. $N = 153-241$. STCI-T = State Trait Cheerfulness Inventory, trait version, CH = cheerfulness, SE = seriousness, BM = bad mood, CSQ = Comic Styles Questionnaire.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Overall, the correlation pattern was comparable with the self-rating. *Mean-spirited and earthy humor (peer)* was characterized by *sarcasm, cynicism, irony, satire*, low *seriousness*, and low *humor*. The self-rated *mean-spirited and earthy humor* factor was correlated with *sarcasm* and *cynicism*. *Entertaining humor* (self and peer) was positively correlated with *cheerfulness*. *Cheerfulness* was a strongly negatively correlated with the

factor *inept vs. good sense of humor*. Further, this factor was characterized by *bad mood*, negative *fun*, and *sarcasm*. Finally, factor *cognitive playfulness* (peer) did show a relation to peer-rated *humor*.

Relations to personality. *Mean-spirited and earthy humor* (self) was negatively correlated with *agreeableness* and *conscientiousness* while in the peer-ratings only *conscientiousness* was negatively correlated with this factor. *Extraversion* was positively correlated with *entertaining humor* in both self- and peer-ratings. Further, *entertaining humor* was correlated with *agreeableness* and negatively with *neuroticism* in the self-ratings. *Inept humor* was highly correlated with *neuroticism* and negatively with *extraversion*, *conscientiousness* and *openness to experience*. Finally, *cognitive playfulness* was related to *openness to experience* (both self- and peer-ratings).

Discussion

The first aim of the study was to investigate the underlying dimensions of the HBQD in order to replicate the findings by Craik et al. (1996). As expected, the factor analysis of the 100 humor statements showed that humor is not a unidimensional construct. We decided to extract four factors. However, a parallel analysis indicated that up to seven factors might be possible. Even though factor five (*laughter*) and factor six (*spontaneous vs. canned humor*) were interpretable we decided for a more parsimonious solution. However, it might be possible that further humorous behavior describing specific forms of laughter or spontaneous/canned humor can be found to further substantiate the relevance of these factors. All of the four humorous factors were unipolar. This unipolarity is in accordance with earlier studies, where problems with the intercorrelations between the HBQD styles were reported (Müller & Ruch, 2011; see also Kirsh & Kuiper, 2003).

The present study shows that four basic dimensions are needed to describe humor, namely *mean-spirited and earthy humor*, *entertaining humor*, *inept (vs. good sense of) humor*

and *cognitive playfulness*. Ruch (1995) suggests that at least a cognitive and an affective dimension are needed to describe humor. Using a comprehensive set of measures in the present study underlines this notion. The findings lend further support to it. The first affective dimension called *mean-spirited and earthy humor* is a combination of *mean-spirited* and *earthy humor* styles of the original HBQD. This first factor develops in the first step of the hierarchical analysis and stays stable through the whole analysis. In step four, the items describing part of the *inept humor* split into the third factor. Therefore, after step four, the factor *mean-spirited and earthy humor* also involves a good handling of humor which means even though the humor is disparaging the person is perceived to be funny.

When considering earlier approaches in humor we find a majority of the items in this factor supporting “old” theories of humor, namely the disparaging and superiority theories: “Disparagement humor refers to remarks that (are intended to) elicit amusement through the denigration, derogation, or belittlement of a given target” (p. 283, Ferguson & Ford, 2008). The superiority theories (e.g., Gruner, 1997, Keith-Spiegel, 1972) go along with the disparagement theory indicating that the amusement comes from a feeling of superiority when a person recognizes the weakness of others.

Entertaining humor also develops in the first step of the analysis. However, this second factor is not as stable as the first one since the items referring to verbal humor and humor as a worldview load on the factor *cognitive playfulness* in the second step. In the third step, items in context to laughter split into a new factor. This factor is mainly built from the *socially warm* and *boorish* items of the initial HBQD. *Cheerfulness* is a good predictor of *entertaining humor* since it strongly resembles two of the five facets of *cheerfulness* (i.e., a generally cheerful interaction style, and a low threshold for smiling and laughter). The importance of a social setting for the use of this humor is reflected in the high relationship with *extraversion*. This factor is comparable with the *socially warm/general sense of humor*

factor in the study of Kirsh and Kuiper (2003). However, *entertaining humor* focuses more on the amusing aspect of humorous behavior than on the socially beneficial aspect of humor, which is only one part of this factor, whereas it is the main theme in Kirsh and Kuiper.

Overall, a high scorer in *entertaining humor* enjoys reaching the audience. He or she needs others to flourish and to trigger laughter with every resource possible (e.g., body, voice, playing around, telling stories). Even though the item content does not provide information on the kind of humor used, one might argue that *entertaining humor* results in a type of “positive humor”. This may help maintain and elicit social relationships and is, therefore, part of the interpersonal humor style described by Martin (2007), since the social interaction is an important element of this factor.

Cognitive playfulness combines *benign* and *reflective humor* of the original HBQD. The relation to other humor styles is not as close as it is for the other three dimensions and it is the only humor factor that shows neither a relation to the state-trait model of exhilaration nor to *extraversion*. Parts of the *cognitive playfulness* can be described by the incongruity-resolution theory (Suls, 1977). McGhee (1999) described humor in everyday life and verbal humor as two facets of *sense of humor*. *Intellectual humor* was found in the study of Kirsh and Kuiper (2003) and can be considered as part of *cognitive playfulness*. The factor involves humor in everyday life, humor as a worldview, and spontaneous humor and is therefore broader than the factor found in the study of Kirsh and Kuiper. The *cognitive playfulness* dimension is the only dimension with relations to humor production. A person using this humor style produces not only more but also funnier and more inventive punch lines. It is probably the playful frame of mind that makes the person produce punch lines in such a standardized, non-spontaneous setting.

Finally, *inept humor* describes an inappropriate way of using humor. A person applying this humor style is not necessarily humorless because he or she tries to be involved

in humorous situations, makes jokes or laughs about funny things. However, this person does not use humor appropriately. The style is directed toward others, since the person is always concerned about what the counterpart might think. The strong relation to *gelotophobia* shows that there is a dysfunctional relation to humor. Others might think that a person using *inept humor* has a lack of humor. However, this is not necessarily the case because the person can make a large effort to appear funny but is not successful. He or she then appears exaggerated in his/her efforts to respond humorously, or anxious to others.

To strengthen the validity of the proposed structure of the humor dimensions and to eliminate a potential method bias, the second aim of the study was to introduce peer-ratings, in order to compare the factor structure of self- and peer-ratings. The inclusion of peer-ratings for examining the factor structure is a novel contribution to humor research. Factor analysis of the peer-rated data supported the four-factor solution. *Mean-spirited and earthy humor*, *entertaining humor* and *cognitive playfulness* were replicated in the peer-ratings. *Inept humor* was found as well, however, a negative pole describing a good sense of humor expanded this factor. In the original HBQD the opposite pole of *inept humor* was *competent humor*. However, the competent items do not primary load on the negative pole of this factor. The *socially warm* items do mainly describe this factor.

The third aim of the study was to locate existing humor styles in the factor structure. As expected, the self-rating scales could be well located in the factors, whereas the correlations to performance tests were small in size but were in the expected direction. Köhler and Ruch (1996) already suggested that in humor research the performance tests might probably build their own category besides the self-report questionnaires. The findings of this study support this assumption. This means that those with high scores in self-reported humor are not necessarily the ones who are able to produce funny or original punch lines. A self-report scale may underlie certain distortions.

Martin et al. (2003) also proposed four dimensions of humor (i.e., *affiliative*, *self-enhancing*, *aggressive*, and *self-defeating*). These are located in the four dimensions of this study. However, the four styles of the HSQ are not comprehensive and therefore do not fully overlap. One reason might be that Martin et al. constructed the four dimensions relating to specific functions in everyday life, whereas the four factors found in this study displayed general humorous behavior. *Self-enhancing humor*, for example, has the function to protect the self, and according to Ziv's (1984) conceptualizations of humor, it is viewed as an intrapsychic function of humor. *Self-enhancing humor* is only one part of *cognitive playfulness*. The dimension *cognitive playfulness* goes much further including verbal humor, which is not a part of *self-enhancing humor*. *Cognitive playfulness* does not necessarily have the function of self-protection. Further, *cognitive playfulness* expands existing concepts as those by Martin et al. (2003) and is completely missing in the State-Trait-Cheerfulness model of exhilaration. *Cheerfulness*, *seriousness* and *bad mood* are able to predict the first three dimensions but not *cognitive playfulness*.

Limitations of the study. As already mentioned earlier, a limitation of the study refers to the underlying data set of the HBQD. The items were written in the 90ies of the last century. Structural changes (Internet, Smart phones) have influenced our lives significantly. As an example, the use of Internet, sending around e-mails with funny contents, and sharing funny contents on social media is not covered by the HBQD. Further, some of the behaviors described in the HBQD might be out of date. Future studies must inspect whether a revision of the items would bring new results, or if humorous behavior would be stable no matter of the communication style. Further, one might test if it is possible to find more humorous behavior than these 100 described in the HBQD and investigate the effect of the new items on the factor structure. Probably factor 5 (*laughter*) and factor 6 (*spontaneous vs. canned humor*) might become relevant factors.

In this study only six humor scales out of about 50 that exist were used (a full overview of them can be found in Ruch, 1998). We do not know whether the other 44 find their place in the four-factor structure as well.

Conclusions. The use of a multimethod approach (i.e., including peer-rating and performance tests) extends former humor research and allows a better understanding of the structure of humor. Self- and peer-rated humor do show the same structure, which supports robustness of the four dimensions that are needed to explain the field of humorous behavior measured. The dimensions do cover affective, cognitive and the humorless/dysfunctional use of humor. However, humor production as it is measured with performance tests is not embedded in the four dimensions. The present study confirms the suggestion of Köhler and Ruch (1996) that performance tests build their own humor category. However, performance tests are not yet as thoroughly studied as self-report scales are. Future studies might focus on those for a better understanding of the function of humor production.

References part II

- Bortz, J. (2005). *Statistik für Human- und Sozialwissenschaften* [Statistics for human and social science]. Heidelberg, Germany: Springer.
- Craik, K. H., Lampert, M. D., & Nelson, A.J. (1996). Sense of humor and styles of everyday humorous conduct. *Humor: International Journal of Humor Research*, 9, 273-302.
doi:10.1515/humr.1996.9.3-4.273
- De Raad, B. (2009). Structural models of personality. In P. J. Corr, & G. Matthews (Eds.), *The Cambridge handbook of personality psychology* (pp. 127-147). New York, NY: Cambridge University Press.
- Ferguson, M. A., & Ford, T. E. (2008). Disparagement humor: A theoretical and empirical review of psychoanalytic, superiority, and social identity theories. *Humor: International Journal of Humor Research*, 21, 283-321.
doi:10.1515/HUMOR.2008.014
- Goldberg, L. R. (2006). Doing it all Bass-Ackwards: The development of hierarchical factor structures from the top down. *Journal of Research in Personality*, 40, 374-358.
doi:10.1016/j.jrp.2006.01.001
- Gruner, C. R. (1997). *The game of humor: A comprehensive theory of why we laugh*. New Brunswick, NJ: Transaction Publishers.
- Horn, J. L. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, 30, 179-185. doi:10.1007/BF02289447
- John, O. P., & Donahue, E. M. (1991). *The Big Five Inventory: Version 4a and 54*. Technical report, Institute of Personality and Social Research, University of California. Berkeley, CA.

- Keith-Spiegel, P. (1972). Early conceptions of humor: Varieties and issues. In J. H. Goldstein & P. E. McGhee (Eds.), *The psychology of humor: Theoretical perspectives and empirical issues* (pp. 3–39). New York, NY: Academic Press.
- Kirsh, G. A., & Kuiper, N. A. (2003). Positive and negative aspects of sense of humor: Associations with the constructs of individualism and relatedness. *Humor: International Journal of Humor Research*, 16, 33-62. doi:10.1515/humr.2003.004
- Köhler, G., & Ruch, W. (1996). Sources of variance in current sense of humor inventories: How much substance, how much method variance? *Humor: International Journal of Humor Research*, 9, 363-379. doi:10.1515/humr.1996.9.3-4.363
- Köhler, G., & Ruch, W. (1993). *The Cartoon Punch line Production Test - CPPT*. Unpublished manuscript. University of Düsseldorf, Department of Psychology, Düsseldorf, Germany.
- Martin, R. A. (2007). *The psychology of humor. An integrative approach*. Burlington, MA: Elsevier.
- Lang, F. R., Lüdtke, O., & Asendorpf, J. (2001). Testgüte und psychometrische Äquivalenz der deutschen Version des Big Five Inventory (BFI) bei jungen, mittelalten und alten Erwachsenen. [Validity and psychometric equivalence of the German version of the Big Five Inventory in young, middle-aged and old adults]. *Diagnostica*, 47, 111–112.
- Martin, R. A., & Lefcourt, H. M. (1984). The situational humor response questionnaire: A quantitative measure of the sense of humor. *Journal of Personality and Social Psychology*, 47, 145-155. doi:10.1037/0022-3514.47.1.145
- Martin, R. A., & Lefcourt, H. M. (1983). Sense of humor as a moderator of the relation between stressors and moods. *Journal of Personality and Social Psychology*, 45, 1313-1324. doi:10.1037/0022-3514.45.6.1313

- Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. (2003). Individual differences in uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire. *Journal of Research in Personality*, 37, 48-75. doi:10.1016/S0092-6566(02)00534-2
- McGhee, P. E. (1999). *Health, healing and the amuse system: Humor as survival training* (3rd ed.). Dubuque, IA: Kendall/Hunt Publishing Company.
- Müller, L., & Ruch, W. (2011). Humor and strengths of character. *The Journal of Positive Psychology*, 6, 369-376. doi:10.1080/17439760.2011.592508
- Ruch, W. (1983). *Humor-Test 3 WD (Form A, B, and K)*. Unpublished manuscript, University of Düsseldorf, Department of Psychology, Düsseldorf, Germany.
- Ruch, W. (1992). Assessment of appreciation of humor: Studies with the 3 WD humor test. In C. D. Spielberger, & J. N. Butcher (Eds). *Advances in personality assessment*, Vol 9 (pp. 27-75). Hillsdale NJ: Lawrence Erlbaum Associates.
- Ruch, W. (1994a). Extraversion, alcohol, and enjoyment. *Personality and individual differences*. 16, 89-102. doi:10.1016/0191-8869(94)90113-9
- Ruch, W. (1994b). Temperament, Eysencks's PEN system, and humor-related traits. *Humor: International Journal of Humor Research*, 7, 209-244. doi:10.1515/humr.1994.7.3.209
- Ruch, W. (1995). *A psycholexical study of the "sense of humor": Taxonomizing German humor-related noun*. The Thirteenth International Humor Conference, Birmingham, July 31-August 4.
- Ruch, W. (1998). *The sense of humor: Explorations of a personality characteristic* (Humor Research Series, Vol 3). Berlin, Germany: Mouton de Gruyter.
- Ruch, W. (2008). The psychology of humor. In V. Raskin (Ed.), *A primer of humor research* (pp. 17-100). Berlin, Germany: Mouton de Gruyter.

- Ruch, W., Beermann, U., & Proyer, R. T. (2009). Investigating the humor of gelotophobes: Does feeling ridiculous equal being humorless? *Humor: International Journal of Humor Research*, 22, 111-143. doi:10.1515/HUMR.2009.006
- Ruch, W., & Carrell, A. (1998). Trait cheerfulness and the sense of humor. *Personality and Individual Differences*, 24, 551-558. doi:org/10.1016/S0191-8869(97)00221-3
- Ruch, W., & Deckers, L. (1993). Do extraverts “like to laugh”? An analysis of the situational humor response questionnaire (SHRQ). *European journal of personality*, 7, 211-220. doi:10.1002/per.2410070402
- Ruch, W., Köhler, G., & van Thriel, Ch. (1996). Assessing the “humorous temperament:” Construction of the facet and standard trait forms of the State-Trait-Cheerfulness-Inventory-STCI. Measurement of the sense of humor [special issue]. *Humor: International Journal of Humor Research*, 9, 303-339. doi:10.1515/humr.1996.9.3-4.303
- Ruch, W., & Proyer, R. T. (2009). Extending the study of gelotophobia: On gelotophiles and katagelasticists. *Humor: International Journal of Humor Research*, 22, 183-212. doi:10.1515/HUMR.2009.009
- Ruch, W., Proyer, R. T., Esser, C., & Mitrache, O. (2011). *Cheerfulness and everyday humorous conduct*. In Romanian Academy, “George Barit” Institute of History, Department of Social Research (Ed.), *Studies and researches in social sciences* (Vol. 18), 67-87. Cluj-Napoca, Romania: Argonaut Press. doi:org/10.5167/uzh-48365
- Schmidt-Hidding, W. (1963). *Europäische Schlüsselwörter. Band I: Humor und Witz* [European key terms. Volume I: Humor and Wit] Munich, Germany: Huber.
- Suls, J. (1977). Cognitive and disparagement theories of humor: A theoretical and empirical synthesis. In A. J. Chapman, & H. C. Foot (Eds.), *It's a funny thing, humor* (pp. 41-45) Oxford, UK: Pergamon.

Thorson, J. A., & Powell, F. C. (1993). Development and validation of a multidimensional sense of humor scale. *Journal of Clinical Psychology*, 49, 13-23. doi:10.1002/1097-4679(199301)49:1<13::AID-JCLP2270490103>3.0.CO;2-S

Ziv, A. (1984). *Personality and sense of humor*. New York, NY: Springer.

**PART III – HUMOR AND THE GOOD LIFE: ANALYSIS OF A SELF- AND PEER-
RATED FACTOR ANALYSIS**

Introduction

Humor plays a key role in people's life (Ruch, Proyer, & Weber, 2010). Early psychologists, researchers and laypersons ascribe a positive influence on mental and physical health and the good life to humor. For example, Freud (1928), Maslow (1954) and Allport (1961) discussed the contribution of a benevolent humor for mental health. However, research on humor and the good life shows that there are still open questions about the relationship. This study considers aspects that have not yet received much attention: Aside from self-reports this study also provides data on peer-ratings to include different perspectives on humor and life satisfaction, one major contributor to the good life. Further we investigated facets from different humor conceptualizations that cover a broad range of facets instead of just focusing on one or only few facets. Finally, the hierarchical factors of humorous behavior help better our understanding of the structure and the relations.

The relationship between facets of humor and life satisfaction. In the framework of this study we investigate *life satisfaction* as one major contributor to the good life. It covers people's cognitive evaluations of their lives. It is seen as a primarily cognitive, enduring, and encompassing state of mind, the cognitive component of subjective well-being (Diener, 2000). Predictors of life satisfaction, such as social network and personality traits were studied frequently in the literature. For example, personality traits have been found to be good predictors of well-being and life satisfaction (Diener & Lucas, 1999).

The broaden-and-build theory (Frederickson, 2001) might give one explanation why sense of humor should contribute to life satisfaction. The theory assumes that emotions are able to influence how people perceive the world and how they behave. Positive emotions, for example, pride, satisfaction, or love, act as vehicles for individual growth. By sensing positive emotions, a motivational basis for skills is built, which can develop into personal resources. By doing so, a positive spiral develops which keeps on going and finally may lead to increased life satisfaction. Humor can generate such a positive emotion and therefore activate

the positive spiral. This might be the reason why sense of humor may contribute to life satisfaction.

Studies usually find sense of humor to be a good predictor for life satisfaction. However, the focus in research lies on two conceptualizations of humor. First, there are studies in the framework of positive psychology, where humor is treated as a character strength and measured within a framework of 24 strengths in the Values in Action Classification of Strength (VIA-CS, Peterson & Seligman, 2004). Humor as a strength was found to be strongly related to life satisfaction ($r = .29$; Peterson, Ruch, Beerman, Park, & Seligman, 2007). Second, in humor research the four humor styles (i.e., affiliative, self-enhancing humor, aggressive humor, and self-defeating humor) of the Humor Styles Questionnaire (HSQ, Martin, Phulik-Doris, Larsen, Gray & Weir, 2003) were related to life satisfaction. In these studies, usually individuals with high scores in affiliative and self-enhancing humor, and low scores in self-defeating humor, report of increased life satisfaction, while no relation to aggressive humor was found (Dyck & Holzmann, 2013; Edwards & Martin, 2014; Jovanovic, 2011; Ruch & Heintz, 2014). Leist and Müller (2013) and Zhao, Wang and Kong (2014) reported the same findings for the two adaptive styles but not for the self-defeating style, which was unrelated to life satisfaction. Karou-ei, Dousty, Deshiri and Heydari (2009) found that individuals reporting high scores in aggressive humor showed decreased life satisfaction.

A few studies did consider the influence of personality on the relationship between sense of humor and life satisfaction. When controlling for neuroticism only, the three styles of the HSQ (i.e., high affiliative and self-enhancing humor, and low self-defeating humor) were still able to predict life satisfaction (Dyck & Holtzmann, 2013). In addition to neuroticism, Jovanovic (2011) added extraversion. Of the four HSQ styles only self-enhancing humor shared variance with life satisfaction over the two Big Five personality dimensions. The authors assume that self-enhancing humor may contribute to life satisfaction because it

involves coping humor. The coping nature of this humor style seems to be important for dealing with stress and therefore leads to increased life satisfaction.

Finally, Ruch and Heintz (2013) examined all of the Big Five personality dimensions. Again, self-defeating humor was the only humor style of the HSQ that predicted life satisfaction over and above all Big Five personality dimensions.

There are also intervention studies that show that there is a causal relation between humor and life satisfaction. Several studies have found that training humor increases life satisfaction (Konradt, Hirsch, Jonitz & Junglas, 2013; McGhee, 2010; Hirsch, Junglas, Konradt & Jonitz, 2010; Mathieu, 2008). Other studies have found no significant relationship between humor and life satisfaction (Celso, Ebener & Burkhead, 2003).

Existing literature focuses on the humor styles of the HSQ or on humor as a character strength. The logical consequences for humor research are obvious. If certain facets of sense of humor have not been investigated so far, it is difficult to bring literature on humor and life satisfaction to a conclusion. This study makes an effort to narrow this gap and brings research on sense of humor and life satisfaction one step further by considering all Big Five personality dimensions as well.

Since there are many different facets of sense of humor, it seems reasonable to assume that not all have the same impact on life satisfaction. One might argue, that some are beneficial, while others may even have a negative impact (e.g., being laughed at, putting someone down). Some might exist independently from life satisfaction. In this study we aimed to cover all sense of humor facets that are common in the present literature.

Another common problem in humor research is that different phenomena are labeled with the same term – humor. This makes it difficult to compare findings across studies. Therefore, it is important to consider all existing facets of humor in order to make meaningful statements about the relationship between humor and life satisfaction. One might argue that the relationship between humor and life satisfaction is still not fully clear. The current study

allows for the comparison between different conceptualizations of humor. The findings will provide a more differentiated overview on the relations—also by considering hitherto less frequently studied aspects such as humorlessness. Additionally, ratings from knowledgeable others will be considered (peer-ratings). An interpretation of both, self- and peer-reports, allows for a more comprehensive evaluation of the associations between humor and life satisfaction.

Overview on humor conceptualizations. Craik, Lampert and Nelson (1996) published the most comprehensive set of humor behaviors in literature so far. The list is heterogeneous in the sense that different humorous behaviors are included. It proposes five independent factors and is, to this date, the most differentiated structural model of humor (Ruch et al., 2011). Craik et al. (1996) collected specific forms of everyday humorous conduct from an act frequency perspective and from a review of the theoretical and empirical psychological research literature on humor. They arrived at a set of 100 non-redundant statements. In searching for a comprehensive model of humor (see part II) the 100 statements from self- and peer-ratings were subjected to a hierarchical factor analysis. They found support for a four-factor solution, which best explained the data in terms of differentiation and interpretability (for both self- and peer-ratings). These factors were labeled as: *mean-spirited and earthy humor*, *entertaining humor*, *inept humor*, and *cognitive playfulness*. The hierarchical analysis of a parallel set of peer-rated humor statements yielded highly similar results. Tucker's phi coefficients for three of the factors indicated a factorial invariance ($p_1 = .91$, $p_2 = .93$ $p_4 = .86$). However, the third factor was bipolar, namely *inept versus good sense of humor* ($p_3 = .75$).

For this study the data from study II were reanalyzed. The factor scores derived from the hierarchical factor analysis were used for testing associations with life satisfaction. Analysis will be based on both self- and peer-rated factors.

It will also be tested how other conceptualizations of humor are associated with life satisfaction. For example, Ruch, Köhler and van Thriel (1996) did not intend to measure sense of humor, but rather described the three components of the temperamental basis of humor, namely *cheerfulness*, *seriousness* and *bad mood*. The three dimensions are measured by the *State-Trait-Cheerfulness Inventory* (STCI-T; Ruch et al., 1996) by self- and peer-reports in this study.

The humor styles *affiliative humor*, *self-enhancing humor*, *aggressive humor*, and *self-defeating humor* (Martin, et al., 2003) are related to different uses or functions of humor in everyday life. While affiliative humor and self-enhancing humor were considered to be conducive to psychosocial well-being, the other two humor styles were considered to be potentially deleterious. The four humor styles are measured by the *Humor Styles Questionnaire* (HSQ; Martin et al., 2003). Even though the HSQ is widely used in research the incremental validity of the styles in predicting psychological well-being beyond personality seems rather low (Ruch & Heintz, 2013).

Finally, *gelotophobia* (the fear of being laughed at) covers humorless aspects of humor, since humorlessness must be considered as well for a complete picture of humor. Additionally, the related concepts *gelotophilia* (the joy of being laughed at) and *katagelasticism* (the joy of laughing at others) were assessed in this study with the PhoPhiKat (Ruch & Proyer, 2009).

We expect that life satisfaction will be positively associated with humor facets that account for one's readiness for positive emotions and laughter and social settings such as cheerfulness, affiliative humor and entertaining humor. A negative relation with life satisfaction is expected for facets that show a disposition towards humorlessness or dysfunctional use of humor (i.e., gelotophobia, inept humor). For facets that show a disposition towards ridicule and aggressive forms of humor (i.e., aggressive humor,

katagelasticism, and mean-spirited and earthy humor) and cognitive forms of humor (cognitive playfulness) we do not expect any association with life satisfaction.

For a more precise understanding of the mechanism linking humor and life satisfaction, personality traits should be taken into consideration (e.g., Jovanovic, 2011). This study expands existing literature by considering the influence of personality on the relationship between humor and life satisfaction. Earlier research showed that humor and personality share a large portion of common variance (e.g., Ruch, 2008; Schermer, Martin, Martin, Lynskey, & Vernon, 2013). We investigate the contribution of humor on life satisfaction above and beyond personality. We expect that personality inflates the effects, and the associations to life satisfaction are lowered. The data for the humor scales, the five personality factors and life satisfaction was also already collected for study II but analyzed the first time for this study.

Aims of the present study. The main aim of the present study was twofold: Firstly, we aimed to test the association of a comprehensive list of humorous behavior with life satisfaction. This was done for a) self-ratings and b) peer-ratings of both, humorous behavior and life satisfaction. We re-analyzed data from study II which found support for a four-factor solution of Craik et al.'s (1996) comprehensive list of humorous behavior. Study II reports good convergence between self- and peer-reports. However, other solutions (i.e., one to six factor extracted in a hierarchical factor analysis) were also evaluated. We tested the association of life satisfaction with each of the factor scores derived for the one to six factor solutions.

Secondly, we tested the association of a) three dispositions towards ridicule and being laughed at; b) the temperamental basis of the sense of humor; and c) four different humor styles and both, self- and peer-rated life satisfaction. Analyses were conducted separately, controlling for demographics and the big five personality traits.

Method

Participants.

Self-ratings. The sample consisted of $N = 516$ participants; 35.1% were males and 64.9% were females. The mean age of the participants was 34.03 ($SD = 13.97$) and ranged from 17 to 74 years. The sample was highly educated; 21.5% held a degree from a university or an institute of higher education, 36.2% finished high school, 36.6% had an apprenticeship, 2.9% finished compulsory school, and 0.6% did not finish compulsory school. Each participant was asked to invite a friend/family member to complete the peer rating (46.7% of those who completed the study provided a peer-rating).

Peer-ratings. The peer rating sample consisted of $N = 241$ participants; 39.7% were males and 60.3% were females. The mean age of the participants was 35.96 ($SD = 14.86$) and ranged from 18 to 81 years. About one third of the peer-raters were married or in a romantic partnership with the rated person (34.3%), 31.4% were relatives, 30.5% belonged to the closer family (i.e., parents, siblings, children), 2.9% were colleagues at work and only 0.8% friends. The peer-rater provided ratings on how long they had known the target person ($M = 18.80$ years; range from 1.00 – 72.00 years; only two out of 241 knew the target person less than one year).

Measures. The *Humorous Behavior Q-Rating Form* (HBQ-Rating Form; Craik et al., 1996), a 100-item questionnaire for the measurement of humor-related behaviors or behavior tendencies, was used in the German version (Müller & Ruch, 2011). The English version of the HBQ Rating Form utilizes a nine-step scale. Because the German language does not provide such a fine gradation, in the German version a seven-point answer format is used (see Ruch, Beermann & Proyer, 2009) ranging from 1 = “least characteristic” to 7 = “most characteristic”. A sample item is: “Maintains group morale through humor.” Since the item wording of the HBQD is usable for self- and peer-ratings, only the instruction was changed for the peer-ratings. In this study, only factor scores of the HBQD item set were used. Cronbach’s alpha coefficients ranged for the self-ratings between .62 (*reflective vs. boorish*)

and .83 (*socially warm vs. cold*) with a median of .68, and for the peer-rating they were between .63 (*competent vs. inept*) and .85 (*socially warm vs. cold*; median = .71). Internal consistencies were comparable to earlier studies.

The *Humor Styles Questionnaire* (HSQ; Martin et al., 2003) used in a German version as by Ruch et al. (2009), is a 32-items self-report questionnaire with a seven-point answer format (“totally disagree” = 1 to “totally agree” = 7). It assesses four unipolar humor styles, namely *self-enhancing* (“If I am feeling depressed, I can usually cheer myself up with humor”), *affiliative* (“I laugh and joke a lot with my closest friends”), *aggressive* (“If someone makes a mistake, I will often tease them about it”) and *self-defeating humor* (“I often go overboard in putting myself down when I am making jokes or trying to be funny”). The HSQ is widely used in humor research and the Cronbach’s alpha coefficients in this sample were in the expected range (Martin et al., 2003; Ruch, et al., 2009, Kirsh & Kuiper, 2003): namely, .83 (*affiliative humor*), .79 (*self-enhancing humor*), .69 (*aggressive humor*), and .78 (*self-defeating humor*).

The short form of the *State-Trait-Cheerfulness Inventory* (STCI-T<30>; Ruch et al., 1996) is a 30-item questionnaire with a four-point answer format (1 = “strongly disagree” to 4 = “strongly agree”) for the assessment of the temperamental basis of humor, namely *cheerfulness* (“I am in a mirthful mood”), *seriousness* (“I am in a thoughtful mood”), and *bad mood* (“I am in a bad mood”) as enduring traits. For peer-ratings, a peer-report form of the STCI-T<30> was used in this study. The STCI-T<30> is widely used in research und shows good psychometric properties. Cronbach’s alpha coefficients in the present self-rating sample were .89 (*cheerfulness*), .76 (*seriousness*), and .90 (*bad mood*; peer-rating: .90, .80, and .93; respectively) and were comparable to earlier findings (Ruch et al., 1996).

The *PhoPhiKat-30* (Ruch & Proyer, 2009) is a 30-item questionnaire utilizing a four-point answer format (1 = “strongly disagree” to 4 = “strongly agree”) for the measurement of *gelotophobia* (“When they laugh in my presence I get suspicious”), *gelotophilia* (“I seek

situations in everyday life, in which I can make other people laugh at me”), and *katagelasticism* (“I like to compromise other persons and enjoy when they get laughed at”). The PhoPhiKat-30 is widely used in research and shows good psychometric properties. Cronbach’s alpha coefficients in the present sample were comparable to earlier findings: *gelotophobia*: .81, *gelotophilia*: .80, and *katagelasticism*: .83.

The *Big Five Inventory* (BFI; John, Donahue, & Kentle, 1991) was used in its German version (Lang, Lüdke, & Asendorpf, 2001). It is a 44-item self-report questionnaire with a five-point answer format for the assessment of the Big Five personality traits *extraversion* (8 items; e.g., “I see me as a person who is talkative”), *agreeableness* (9 items; e.g., “I see me as a person who is helpful and unselfish with others”), *conscientiousness* (9 items; e.g., “I see me as a person who makes plans and follows through with them”), *openness to experience* (10 items; e.g., “I see me as a person who likes to reflect, play with ideas”), and *neuroticism* (8 items; e.g., “I see me as a person who worries a lot”). The BFI is widely used in research and has good psychometric properties. Cronbach’s alpha coefficients for the present sample ranged from .73 (*agreeableness*) to .89 (*extraversion*) with a median of .80.

The *Satisfaction With Life Scale* (SWLS, Diener, Emmons, Larsen, & Griffin, 1985) is a five-item measure for assessing the satisfaction with life using a 7-point answer format (from 1 = “strongly disagree” through 7 = “strongly agree”). A sample item is “*the conditions of my life are excellent*”. The SWLS is widely used and showed good psychometric properties in various studies (e.g., Diener, 1994). The Cronbachs alpha coefficient in the present sample was good (.86, for both self- and peer-ratings) and comparable to former findings. The German translation of the scale was used in this study (Ruch, Beermann, Furrer, Huber, & Wenger, 2009). For peer-ratings, a peer-report form of the SWLS was used in this study. Self- and peer-reported *life satisfaction* overlapped with 20.1%.

Procedure.

Data collection. The factor scores from the hierarchical factor analysis of study II were re-analyzed for this study. All other results had not been reported earlier. In short, participants completed all instruments in an online study and were asked to provide a peer-rater who filled in the questionnaires for the peer-ratings online. Self- and peer-ratings were matched by a personal code. Of those participants who started and filled in the demographics, 40.2% finished the full survey. Of those that started the survey, 65.7% completed the HBQD fully and were therefore taken for the data set.

Results

Relations between humor factors extracted from the self-ratings and life satisfaction. To investigate the first aim of the study the factors of the hierarchical factor analysis extracted in the study II were re-analyzed. We computed Pearson correlation coefficients of factor scores of each level with life satisfaction. The correlations were only calculated for levels one to six of the hierarchical factor analysis because further factors provided too few items with substantial loadings and could not be interpreted at the content level. The HBQD items were correlated with life satisfaction to get a better understanding of the relations. Pearson correlations between the humor factors and life satisfaction are given in Table 9.

Table 9

Correlations Between Self- and Peer-Rated Life Satisfaction and Self- and Peer-Rated Factors of the Hierarchical Factor Analysis Level

1 to 6

Factor number	Self-rated hierarchical factors	SWLS		Peer-rated hierarchical factors	SWLS	
	Factor labeling	Self	Peer	Factor labeling	Self	Peer
Level 1						
1_1	General humor	-.09	-.12	General humor	.01	-.21**
Level 2						
1_2	Mean-spirited and earthy	-.18***	-.16	Mean-spirited and earthy	-.03	-.27**
2_2	Good humor	.26***	.08	Good humor	.24**	.28***
Level 3						
1_3	Mean-spirited and earthy	-.24***	-.21**	Mean-spirited and earthy	-.09	-.33**
2_3	Entertaining	.21***	.11	Entertaining	.23**	.21**
3_3	--	.10	-.04	Cognitive playfulness	.08	.10

(Table continues)

Table 9 (continued)

Factor number	Self-rated hierarchical factors	SWLS		Peer-rated hierarchical factors	SWLS	
	Factor labeling	Self	Peer	Factor labeling	Self	Peer
Level 4						
1_4	Mean-spirited and earthy	-.21***	-.17	Mean-spirited and earthy	-.06	-.25**
2_4	Entertaining	.22***	.12	Entertaining	.18*	.11
3_4	Inept	-.14*	-.06	Inept vs. good sense of humor	-.15*	-.29**
4_4	Cognitive playfulness	.04	-.09	Cognitive playfulness	.06	.07
Level 5						
1_5	Mean-spirited and earthy	-.13*	-.11	Mean-spirited and earthy	-.08	-.26**
2_5	Entertaining	.08	.01	Entertaining	.22**	.13*
3_5	Inept	-.28***	-.17	Inept vs. good sense of humor	-.11	-.26**
4_5	Cognitive playfulness	.04	-.09	Cognitive playfulness	.07	.08
5_5	Laughter	.19**	.15	Spontaneous humor	.11	.05

(Table continues)

Table 9 (continued)

Factor number	Self-rated hierarchical factors	SWLS		Peer-rated hierarchical factors	SWLS	
	Factor labeling	Self	Peer	Factor labeling	Self	Peer
Level 6						
1_6	Mean-spirited and earthy	-.12*	-.12	Mean-spirited and earthy	-.07	-.26**
2_6	Entertaining	.13*	.09	Entertaining	.24**	.15*
3_6	Inept	-.27***	-.15	Inept vs. good sense of humor	-.13	-.22**
4_6	Cognitive playfulness	.02	-.15	Cognitive playfulness	.03	.06
5_6	Laughter	.19**	.10	--	-.01	-.16*
6_6	Canned humor	-.05	-.12	Spontaneous humor	.09	.04

Note. $N = 335$; $n = 144$ (self-rated humor, and self- and peer-rated life satisfaction), $n = 154$; $n = 169$ (peer-rated humor, and self- and peer-rated life satisfaction), SWLS = Satisfaction With Life Scale.

* $p < .05$, ** $p < .01$, *** $p < .001$.

As Table 9 shows, the general factor of humor on level 1 was not related to life satisfaction. In study II a robust factor mean-spirited and earthy humor from level two to level six was identified. In all levels it was negatively related to self- and peer-rated life satisfaction. There was a positive correlation from level two to four (the shared variance ranged from 3.24% to 5.76%). After level four the correlations decreased in size (1.44% common variance). There was only one relation between peer-rated life satisfaction and mean-spirited and earthy humor (4.41% shared variance).

Entertaining humor emerged at level three of the analysis from study II until level six. While at level three and four the factor showed a robust relation to self-rated life satisfaction, no significant relation to life satisfaction was found at level five and six. Items relating to life satisfaction loading on entertaining humor at level three and four showed higher factor loadings on a new factor labeled laughter (i.e., item 42: “Laughs heartily, from head to heel, not just with face and diaphragm;” item 44: “Has an infectious laugh that starts others laughing”; $r = .20$; $p < .001$ for both items) and on the factor *inept humor* (i.e., item 26: “Smiles grudgingly”; $r = -.26$; $p < .001$) on level five and six. *Entertaining humor* showed no relation to peer-rated life satisfaction on each level from 1 to 6.

Inept humor appeared in levels four to six from study II. It showed only a weak negative correlation to self-rated life satisfaction in level four, which increased in size numerically in level five and six.

Of the items loading high on inept humor in level four only one item yielded a significant correlation to life satisfaction loaded higher on another factor, namely entertaining humor, in level 5 (i.e., item 98: “Uses humor to gain the affection and approval of others”; $r = -.10$; $p < .05$). However, five items with a meaningful relation to life satisfaction loaded highly on this factor and, therefore, weakened the correlations with other factors from level four to five (i.e., items 86: “Reveals unacknowledged motives through humorous behavior”,

88: “Displays a well-developed, habitual humorous style”, and 94: “Uses wit to keep people at a distance”; $r = -.14, .19$, and $-.18$; $p < .05, .01$; all loaded *on cognitive playfulness* on level four; item 26: “Smiles grudgingly”; $r = -.26$; $p < .001$, loaded *on entertaining humor* on level four; item 41: “Smiles inappropriately”; $r = -.13$; $p < .01$, loaded on mean-spirited and earthy humor).

The correlations with peer-rated life satisfaction were smaller in size. However, the pattern was the same. In level four and six, peer-rated life satisfaction was not related to inept humor. In level five the correlations were significant (2.89% of common variance). Cognitive playfulness was neither related to self-rated nor to peer-rated life satisfaction.

In a second step a multiple regression analysis was computed with sex and age as predictors in step 1 (method: enter) and all factors of a level as predictors (step 2: method enter) and life satisfaction as criterion to investigate the level of the analysis, which explained life satisfaction best. Table 10 shows the F-values and β -coefficients of each factor on each level.

Table 10

Standardized Regression Weights of the Multiple Regression of the Self-Rated Humor Factors and Life Satisfaction

Level	<i>F</i> (df1, df2)	M-S/earthy	Entertaining	Inept	CP	Laughter	Canned	<i>R</i> ²
Self-rated Life satisfaction								
2	13.83(4, 419)***	-.16**	.26***					.12
3	12.12(5, 428)***	-.22***	.20***		.17**			.13
4	10.08(6, 427)***	-.17**	.21***	-.17**	.04			.13
5	9.96(7, 426)***	-.10	.09	-.27***	.04	.16**		.14
6	8.81(8,415)***	-.10	.13**	-.26***	.03	.16**	-.03	.15
Peer-rated Life Satisfaction								
2	1.00(4, 154)	-.19*	-.09					.04
3	2.49(5, 153)*	-.24**	.14**	-.05				.08
4	2.08(6, 152)	-.22*	.14	-.06	-.08			.08
5	2.44(7, 151)*	-.15	.01	-.17*	-.07	.24**		.10
6	2.36(8, 150)*	-.16	.08	-.14	-.14	.15	-.13	.11

Note. *n* = 423 (self-rated life satisfaction), *n* = 158 (peer-rated life satisfaction), Level = level of the hierarchical factor analysis, M-S/earthy = Mean-spirited and earthy, CO = Cognitive Playfulness.

p* < .05. *p* < .01. ****p* < .001.

Table 10 shows that on level two, the accounted variance in life satisfaction was significant, $F(4, 419) = 13.83, p < .001; R^2 = .12$. Until level 6 the shared variance only increased small in size of the coefficients (level 2: 11.7%, level 3: 12.7%, level 4: 12.7%, level 5: 14.4%, level 6: 14.5%).

For the analysis of the level explaining peer-rated life satisfaction best, a multiple regression was computed with sex and age as predictors in step 1 (method: enter) and all factors of a level as predictors (step 2: method enter) and peer-rated life satisfaction as criterion. F -values and β -coefficients of each factor on each level are displayed in Table 10. Only on levels three ($R^2 = .08$), five ($R^2 = .10$), and six ($R^2 = .06$) the accounted variance on peer-rated life satisfaction was significant (all $p < .05$).

Relations between humor factors extracted from the peer-ratings and life satisfaction. The results of the correlations are displayed in Table 9. The factor of general humor in the peer-ratings was negatively related to peer-rated life satisfaction with 4.41% shared variance but it was not related self-rated life satisfaction. Life satisfaction in peer- (7.84%) and self-ratings (5.76% shared variance) was also related to good humor emerging in the second level of the analysis.

As in the self-ratings, peer-rated mean-spirited and earthy humor emerged from level two to six. In all levels it was negatively related to peer-rated life satisfaction (range from 6.25% to 10.89% common variance). However, no significant relation emerged for the correlation with self-rated life satisfaction.

From level three to seven, entertaining humor was positively related to life satisfaction in the peer-ratings. While in level three the relation was significant at the 0.1% level the relation in level five and six was numerically smaller (the amount of common variance ranged from 1.69% to 4.41%). Level four did not show any significant relationship. The correlations between peer-rated entertaining humor and self-rated life satisfaction were stronger than with

peer-rated life satisfaction. The correlation coefficients ranged from $r = .18$ (level four) to $.24$ (level six).

Inept vs. good sense of humor emerging in level 4 of the analysis showed a strong negative correlation to peer-rated life satisfaction (shared variance range from 4.48% to 6.76%). The correlations with self-rated life satisfaction were weaker, but still significant at levels 4 and 6.

As in the self-ratings, cognitive playfulness was not related to life satisfaction in both self-and peer-ratings in all levels. Spontaneous humor emerging in level 5 of the peer-rated hierarchical factor analysis was also not correlated to life satisfaction.

Next, a multiple regression analysis was computed with sex and age as predictors in step1 (method: enter) and all peer-rated factors of a level as predictors (step 2: method enter) and self-rated life satisfaction as criterion to investigate the level of the analysis on which life satisfaction was explained best by the peer-rated humor factors. Table 11 shows the F -values and β -coefficients of each factor on each level.

Table 11

Standardized Regression Weights of the Multiple Regression of the Peer-Rated Humor Factors and Life Satisfaction

Level	<i>F</i> (df1, df2)	M-S/earthy	Entertaining	Inept	CP	Laughter	Canned	<i>R</i> ²
Self-rated Life satisfaction								
2	3.32(4, 168)*	-.02	.25**					.07
3	3.13(5, 167)*	-.08	.25**		.09			.09
4	2.69(6, 166)*	-.05	.22**	-.19*	.06			.09
5	2.67(7, 165)*	-.08	.24**	-.14	.08	.10		.10
6	2.54(8, 164)*	-.07	.27**	-.14	.04	-.04	.08	.11
Peer-rated Life Satisfaction								
2	4.46(4, 171)**	-.22**	.24**					.09
3	3.99(5, 170)**	-.26**	.19*	.10				.11
4	3.32(6, 169)**	-.20*	.11	-.26**	.07			.11
5	2.88(7, 168)**	-.21**	.13	-.25**	.07	.05		.11
6	2.56(8, 167)*	-.20*	.15*	-.22**	.05	-.11	.03	.11

Note. *n* = 172 (self-rated life satisfaction); *N* = 175 (peer-rated life satisfaction); Level = level of the hierarchical factor analysis.

p* < .05. *p* < .01. ****p* < .001.

Table 11 shows the accounted variance on life satisfaction was not significant until level two ($R^2 = .07$). The accounted variance on live satisfaction increased in each level until 11% in level six all $p < .05$). The same procedure was done for peer-rated life satisfaction. A multiple regression analysis was computed with sex and age as predictors in step 1 (method: enter) and all peer-rated factors of a level as predictors (step 2: method enter) and peer-rated life satisfaction as criterion. As well, the general factor of peer-rated humor did not account for enough variance in life satisfaction to reach significance, while from level two to six the shared variance was significant (level two: $R^2 = .09$, $p < .01$; level six: $R^2 = .09$, $p < .05$).

Relations between facets of humor and life satisfaction. For a preliminary analysis the STH<T> scales of the self- and peer-ratings were intercorrelated. Self-rated cheerfulness was positively correlated with peer-rated cheerfulness ($r = .52$), negatively correlated with self-rated seriousness ($r = -.21$) and bad mood in both self- and peer-ratings ($r = -.63$, $-.33$). Self-rated seriousness was positively related to peer-rated seriousness ($r = .55$) and self- and peer-rated bad mood ($r = .18$, $.15$). Finally, self- and peer-rated bad mood were correlated with $r = .61$. The intercorrelations between self- and peer-ratings ranged between $r = .52$ (cheerfulness) and $.61$ (bad mood).

The second aim of the study was to examine the relationship between humor facets that are common in literature and life satisfaction, while controlling the influence of the big five personality traits. To meet the second aim of the study, Pearson correlations (controlled for sex and age) between the humor scales and life satisfaction were computed in a first step. The correlation coefficients are displayed in Table 12.

Table 12

Partial Correlations Between Humor Styles and Life Satisfaction Controlled for Sex and Age in a First Level and Personality in a Second Level for Self- and Peer-Rated Humor

Scales	Self-rated Life satisfaction		Peer-rated life satisfaction	
	Sex, age	P	Sex, age	P
PhoPhiKat				
Katagelasticism	.00	-.03	.01	.10
Gelotophilia	.18**	-.02	-.07	-.13
Gelotophobia	-.38***	-.08	-.07	.15
STCI-T				
Bad mood	-.52***	-.25***	-.38***	-.17*
Seriousness	-.11*	-.05	.08	.11
Cheerfulness	.46***	.20***	.23**	.11
HSQ				
Affiliative Humor	.28***	-.03	.10	.04
Self-enhancing Humor	.31***	.11*	.03	-.05
Aggressive Humor	.04	.04	.00	.07
Self-defeating Humor	-.25***	-.25***	-.19*	-.13
Peer-ratings				
STCI-T				
Bad mood	-.25**	-.03	-.49***	-.43***
Seriousness	.00	.06	.11	.15
Cheerfulness	.25**	.10	.33***	.31***

Note. $n = 335$; $n = 325$ (self-rated life satisfaction), $n = 144$, $n = 137$ (peer-rated life satisfaction), P = personality factors of the Big Five Inventory, PhoPhiKat = Gelotophobia, Gelotophilia, Katagelasticism, STCI-T = State-Trait-Cheerfulness Inventory-Trait Version, HSQ = Humor Styles Questionnaire.

* $p < .05$, ** $p < .01$, *** $p < .00$

Table 12 shows that most of the humor scales were correlated with self-rated life satisfaction when controlling for the demographics (exceptions were: self-rated katagelasticism and hostile humor, cognitive playfulness and peer-rated seriousness, mean-spirited and earthy humor, and cognitive playfulness). Bad mood shared the numerically highest amount of common variance with 27.00%, seriousness and mean-spirited and earthy humor the lowest amount ($r = -.11$).

However, the correlation coefficients were substantially lower when controlling for personality. Only bad mood, cheerfulness, and self-defeating humor (self-ratings) did still share substantial variance with self-rated life satisfaction (range from 4.00% to 6.25%). None of the four HBQD factors (self-and peer-ratings) were still correlated with life satisfaction (range from $r = -.06$ to $.13$). Peer-rated life satisfaction was still associated with self- and peer-rated bad mood and peer-rated cheerfulness. From the HBQD factors, peer-rated life satisfaction was associated with self- and peer-rated mean-spirited and earthy humor ($r = -.19, -.15$), self-rated entertaining humor ($r = .17$), and peer-rated *inept vs. good sense of humor* ($r = -.22$). After controlling for personality, none of the HBQD factors were still associated with peer-rated life satisfaction.

In a second step a multiple regression was computed with sex and age as predictors in step 1 (method enter), all five personality factors in step 2 (method: enter), and each humor scale as predictor in step 3 (method: stepwise) and life satisfaction as criterion to investigate, whether the humor scales do predict life satisfaction even when controlling for personality. The same analysis was computed for peer-rated humor facets and peer-rated life satisfaction.

The multiple regression showed, that only three of the investigated self-rated humor scales were able to predict self-rated life satisfaction when controlling for personality ($F(10, 319) = 17.54; p < .000; R^2 = .36$): bad mood ($\beta = -.20, p < .01$), *cheerfulness* ($\beta = .27, p < .05$), and self-defeating humor ($\beta = -.17, p < .01$). In the peer-ratings bad mood ($\beta = -.49,$

$p < .001$) and seriousness ($\beta = -.20, p < .05$) were able to predict life satisfaction when controlling for self-rated personality ($F(9, 153) = 8.80; p < .000; R^2 = .34$).

Discussion

This study was aimed at contributing to the literature on the relationship between humor and life satisfaction. Overall, findings were mixed. For the first aim of the study we found that one single factor, general humor, explains only about 3% of the variance in life satisfaction, which was practically negligible. The extraction of two factors added substantial variance (12%) for contributing to a satisfied life. However, the increase of accounted variance was small for each further level. Of the two factors, one was positively and the other one negatively associated with life satisfaction. Good humor showed a strong positive relationship to life satisfaction with a shared amount of 6.8% of variance, while the negative association with mean-spirited and earthy humor was weaker (3.2%). Peer-rated good humor as well was strongly positively associated to self- and peer-rated life satisfaction. Good humor describes a person who sees him or herself as someone with a good sense of humor, quick at repartee and telling funny stories. A person using mean-spirited and earthy humor could be best described as someone who uses disparaging humor, who likes macabre and bathroom humor.

For the investigation of the relationship between sense of humor and life satisfaction two facets seem sufficient. More facets of sense of humor do not contribute any substantial increase in the prediction of life satisfaction. Probably the differentiation between beneficial sense of humor and sense of humor facets with negative influence might provide sufficient information to investigate the cognitive life satisfaction. This finding is also in accordance with the findings of Martin (2007) and Jovanovic (2011). However, for a better understanding of sense of humor and its functions it is still important consider all four facets of sense of humor. The investigation of the associations between humor factors of each further step and life satisfaction showed, that inept humor (in self- and peer-ratings) shared substantial

variance with life satisfaction as well. This information is of relevance when investigating the role of humor in positive psychology.

To get a better understanding of the relationship between humor and life satisfaction the correlations were controlled for personality. As expected, the relationship is strongly influenced by personality. If controlled from personality only self- and peer-rated traits of the temperamental basis of humor such as cheerfulness and bad mood, and self-rated self-enhancing and self-defeating humor of the Humor Styles Questionnaire (Martin et al., 2003) show a robust relation to a satisfied life. One reason might be that the concept of the temperamental basis of humor is potentially stronger linked to a theoretical framework than other concepts.

Ruch and Heintz (2013) stated another problem in humor research: The relations of the Humor Styles Questionnaire (Martin et al., 2003) with personality and well-being were driven by the context components and not by humor itself. This means when investigating humor using the HSQ, the results emerge from the relations with the item context rather than from humor. Therefore, the measurement of sense of humor cannot be properly done by using self-reports only. This inflates the results and might affect the effects if personality is controlled for. To make any statement about what variables humor is able to predict it is important to measure humor in a different way. New questionnaires are needed which are able to measure only the core of humor regardless of personality and other context.

Cheerfulness, affiliative humor and self-enhancing humor share a great portion of variance. However, affiliative humor is not related to life satisfaction when controlling for personality. According to Martin et al. (2003) self-enhancing humor has a more intrapsychic than interpersonal focus than affiliative humor. High scorers on self-enhancing humor are frequently amused by the incongruities of life. They have a humorous outlook on life and they remain humorous even when facing adversity. This intrapsychic focus of self-enhancing humor might not be strongly related to extraversion, whereas the interpersonally focused

affiliative humor is. Therefore, self-enhancing humor is able to predict life satisfaction over and above personality. Cheerfulness is composed of five facets (Ruch et al., 1996), of which facet 1 (a prevalence of cheerful mood), facet 2 (a low threshold for smiling and laughter), and facet 3 (a composed view of adverse life circumstances) cover the definition of self-enhancing humor.

Bad mood and self-defeating humor are both negatively associated with life satisfaction. However, the shared amount of variance is moderate. While bad mood is composed of the predominance of a generally bad mood, ill humouredness, and distressed mood (Ruch et al, 1996), self-defeating humor involves humor that attempts to amuse others by saying funny things at one's own expense (Martin et al., 2003).

Overall, sense of humor is closely linked to personality. The results indicate that the incremental validity for sense of humor in terms of life satisfaction over and above personality is low. Only the temperamental basis of the sense of humor and self-enhancing and self-defeating humor are able to predict life satisfaction detached from personality. However, problems with the validity of the HSQ and therefore also with the scales self-enhancing and self-defeating humor occurred (Ruch & Heintz, 2013). Further, the temperamental basis of humor does not measure sense of humor itself. A possible explanation for these findings might be the broaden-and-build theory (Fredrickson, 2001). The assumption of this theory is that the positive emotions make people act more flexible and think more creative, leading to increased attention to peripheral objects, help for better social bonding, and lead to individual growth. With these skills a more effective functioning in everyday life should lead to increased life satisfaction. The positive emotion exhilaratability is composed of the three concepts, cheerfulness, seriousness, and bad mood, which build the basis of sense of humor. There are indicators that the positive emotion exhilaratability is the cause of why humor is related to life satisfaction. The facets of sense of humor are strongly embedded in

the Big Five personality dimensions and therefore not able to predict life satisfaction over and above these five dimensions.

A new contribution to humor research was to include peer-reports. Results showed that the relations to life satisfaction were comparable between self- and peer-ratings. This is an important finding since the multimethodological approach brings more valid and robust results.

Implications for further research and practice in the field of life satisfaction are, that it might be worth investigating the link between positive emotions and sense of humor more deeply in order to understand the mechanism of sense of humor and its relationship to life satisfaction more clearly.

Limitations of the study

This study relies on the most comprehensive measurement of humor so far, the 100 statements of humorous behavior in the HBQD. However, the HBQD was developed in 1996. Until present, new forms of humor developed (e.g. through the use of social media and Internet), and the HBQD does not cover these new forms of humorous behavior.

Further, this study considers only self-report humor questionnaires. Humor performance tests are missing. Further studies might also assess humor production and humor appreciation to complete the picture.

Since we aimed to cover most of the humor concepts that are common in literature, the study became relatively long and, therefore, the drop out quote of the participants was high with 60%. The length of the study might also appeal to certain personality types, while others (e.g., those more impulsive) might find it harder to complete all the questionnaires.

Conclusion

Overall, findings were mixed. However, for the role of sense of humor in positive psychology, the findings are of extreme importance, because the study contributed to existing humor research by examining a comprehensive set of facets of sense of humor. Earlier studies

focused on the conceptualization of the HSQ when investigating the relation between sense of humor and life satisfaction. Further, when considering personality as well, only specific dimensions were investigated. This study brings research in the field of sense of humor and life satisfaction one step further by examining all five dimensions of the Big Five personality factors.

We found the temperamental basis of sense of humor with cheerfulness, and bad mood, and the two HSQ humor styles, self-enhancing humor and self-defeating humor, to be able to predict life satisfaction when controlling for personality, while all other associations between sense of humor facets and life satisfaction vanished. This might be a) due to a methodological bias, when humor questionnaires are not properly constructed (see Ruch & Heintz, 2013 or b) due to the close relation between personality and sense of humor. Exhilaratability as a temperament is an emotion and not a personality trait and therefore able to predict life satisfaction over and above personality. Further research must focus on these questions to bring humor research one step further.

References part III

- Allport, G. W. (1961). *Pattern and growth in personality*. New York, NY: Holt, Rinehart & Winston.
- Celso, B. G., Ebener, D. J., & Burkhead, E. J. (2003). Humor coping, health status, and life satisfaction among older adults in assisted living facilities. *Aging & Mental Health*, 7, 438-445. doi:10.1080/13607860310001594691
- Cohn, M. A., & Fredrickson, B. L. (2009). Positive emotions. In C. R. Snyder & S. J. Lopez (Eds.), *The Oxford handbook of positive psychology*, (pp. 13-24). New York, NY: Oxford University Press.
- Craik, K. H., Lampert, M. D., & Nelson, A.J. (1996). Sense of humor and styles of everyday humorous conduct. *Humor: International Journal of Humor Research*, 9, 273-302. doi:10.1515/humr.1996.9.3-4.273
- Diener, E. (1994). Assessing subjective well-being: Progress and opportunities. *Social Indicators Research*, 31, 103-157. doi:10.1007/BF01207052
- Diener, E. (2000). Subjective Well-Being: The science of happiness and a proposal for a national index. *American Psychologist*, 55, 34-43. doi:10.1037/0003-066X.55.1.34
- Diener, E., Emmons, R. A., Larsen, R. J. & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71-75. doi:10.1207/s15327752jpa4901_13
- Diener, E., & Lucas, R. E. (1999). Personality and subjective well-being. In D. Kahneman, E. Diener, & N. Schwarz (Eds.), *Well-being: The foundations of a hedonic psychology* (pp. 213–229). New York, NY: Russell Sage Foundation.
- Dyck, K. T., & Holtzman, S. (2013). Understanding humor styles and well-being: The importance of social relationships and gender. *Personality and Individual Differences*, 55, 53-58. doi:10.1016/j.paid.2013.01.023

- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American psychologist*, 56, 218-226.
doi:10.1037/0003-066X.56.3.218
- Edwards, K. R., & Martin, R. A. (2014). The conceptualization, measurement, and role of humor as a character strength in positive psychology. *Europe's Journal of Psychology*, 10, 505-519. doi:10.5964/ejop.v10i3.759
- Freud, S. (1928). Humor. *The International Journal of Psychoanalysis*, 9, 1-6.
- Hirsch, R.D., Junglas, K., Konradt, B., & Jonitz, M.F. (2010). Humorthérapie bei alten Menschen mit einer Depression: Ergebnisse einer empirischen Untersuchung [Humor therapy in the depressed elderly: Results of an empirical study]. *Zeitschrift für Gerontologie und Geriatrie*, 43, 42-52. doi:10.1007/s00391-009-0086-9
- John, O. P., & Donahue, E. M., & Kentle, R. L. (1991). *The Big Five Inventory: Version 4a and 54*. Technical report, Institute of Personality and Social Research, University of California. Berkeley, CA.
- Jovanovic, V. (2011). Do humor styles matter in the relationship between personality and subjective well-being? *Scandinavian Journal of Psychology*, 52, 502-507.
doi:10.1111/j.1467-9450.2011.00898.x
- Kantor, M. (1992). The human dimension of depression: A practical guide to diagnosis, understanding, and treatment. New York, NY: Praeger.
- Karou-ei, R. A., Doosti, Y. A., Dehshiri, G. R., & Heidari, M. H. (2009). Humor styles, subjective well-being, and emotional intelligence in college students. *Journal of Iranian Psychologists*, 5, 159-169.
- Kerckänen, P., Kuiper, N. A., & Martin, R. A. (2004). Sense of humor, physical health, and well-being at work: A three-year longitudinal study of Finnish police officers. *Humor: International Journal of Humor Research*, 17, 21-35. doi:10.1515/humr.2004.006

- Kirsh, G. A., & Kuiper, N. A. (2003). Positive and negative aspects of sense of humor: Associations with the constructs of individualism and relatedness. *Humor: International Journal of Humor Research*, 16, 33-62. doi:10.1515/humr.2003.004
- Köhler, G., & Ruch, W. (1996). Sources of variance in current sense of humor inventories: How much substance, how much method variance? *Humor: International Journal of Humor Research*, 9, 363-397. doi:10.1515/humr.1996.9.3-4.303
- Konradt, B., Hirsch, R. D., Jonitz, M. F., & Junglas, K. (2013). Evaluation of a standardized humor group in a clinical setting: A feasibility study for older patients with depression. *International Journal of Geriatric Psychiatry*, 28, 850–857. doi:10.1002/gps.3893
- Kuiper, N. A., Grimshaw, M., Leite, C., & Kirsh, G. (2004). Humor is not always the best medicine: Specific components of sense of humor and psychological well-being. *Humor: International Journal of Humor Research*, 17, 135–168. doi:10.1515/humr.2004.002
- Lang, F. R., Lüdtke, O., & Asendorpf, J. (2001). Testgüte und psychometrische Äquivalenz der deutschen Version des Big Five Inventory (BFI) bei jungen, mittelalten und alten Erwachsenen. [Validity and psychometric equivalence of the German version of the Big Five Inventory in young, middle-aged and old adults]. *Diagnostica*, 47, 111–112. doi:10.1026//0012-1924.47.3.111
- Leist, A. K., & Müller, D. (2013). Humor types show different patterns of self-regulation, self-esteem, and well-being. *Journal of Happiness Studies*, 14, 551-569. doi:10.1007/s10902-012-9342-6
- Martin, R. A. (2007). The psychology of humor. An integrative approach. London, UK: Elsevier.
- Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. (2003). Individual differences in uses of humor and their relation to psychological well-being:

- Development of the Humor Styles Questionnaire. *Journal of Research in Personality*, 37, 48-75. doi:10.1016/S0092-6566(02)00534-2
- Maslow, A. H. (1954). *Motivation and personality*. New York, NY: Harper.
- Mathieu, S. I. (2008). Happiness and humor group promotes life satisfaction for senior center participants. *Activities, Adaption & Aging*, 23, 134-148.
doi:10.1080/01924780802143089
- McGhee, P. E. (2010). Humor as survival training for a stressed-out world. The 7 humor habits program. Bloomington, IN: Author House.
- Müller, L., & Ruch, W. (2011). Humor and strengths of character. *The Journal of Positive Psychology*, 6, 368-376. doi:10.1080/17439760.2011.592508
- Park, N., Peterson, C., & Seligman, M. E. P. (2004). Strengths of character and well-being. *Journal of Social and Clinical Psychology*, 23, 603-619.
doi:10.1521/jscp.23.5.603.50748
- Peterson, C., Park, N., & Seligman, M. E. P. (2006). Greater strengths of character and recovery from illness. *Journal of Positive Psychology*, 1, 7-26.
doi:10.1080/17439760500372739
- Peterson, C., Ruch, W., Beermann, U., Park, N., & Seligman, M. E. P. (2007). Strengths of character, orientations to happiness, and life satisfaction. *Journal of Positive Psychology*, 2, 149-156. doi:10.1080/17439760701228938
- Peterson, C., & Seligman, M.E.P. (2004). *Character strengths and virtues: A handbook and classification*. New York, NY: Oxford University Press/Washington, DC: American Psychological Association.
- Ruch, W. (2014). Cheerfulness. In A. C. Michalos (Ed.), *Encyclopedia of Quality of Life and Well-Being Research* (pp. 658 - 662). Dordrecht, NL: Springer.

- Ruch, W. (2008). Psychology of humor. In V. Raskin (Ed.), *The Primer of Humor Research* (pp. 17 – 100). Berlin, D: Mouton de Gruyter.
- Ruch, W., Beermann, U., Furrer, G., Huber, A., & Wenger, J. (2004). *Deutsche Übersetzung [German translation] Satisfaction With Life Scale and Orientations to Happiness Scale*. Unpublished Instrument. Department of Psychology, University of Zurich.
- Ruch, W., Beermann, U., & Proyer, R. T. (2009). Investigating the humor of gelotophobes: Does feeling ridiculous equal being humorless? *Humor: International Journal of Humor Research*, 22, 111-143. doi:10.1515/humr.2009.006
- Ruch, W., & Carrell, A. (1998). Trait cheerfulness and the sense of humor. *Personality and Individual Differences*, 24, 551-558. doi:10.1016/S0191-8869(97)00221-3
- Ruch, W., & Heintz, S. (2013). Humour styles, personality and psychological well-being: What's humour got to do with it? *European Journal of Humour Research*, 1, 1-24. Retrieved from europeanjournalofhumor.org/index.php/ejhr/article/view/35
- Ruch, W., Köhler, G., & van Thiel, Ch. (1996). Assessing the “humorous temperament:” Construction of the facet and standard trait forms of the State-Trait-Cheerfulness-Inventory-STCI. *Humor: International Journal of Humor Research*, 9, 303-339. doi: 10.1515/humr.1996.9.3-4.303
- Ruch, W., & Proyer, R. T. (2009). Extending the study of gelotophobia: On gelotophiles and katagelasticists. *Humor: International Journal of Humor Research*, 22, 183-212. doi:10.1515/HUMR.2009.009
- Ruch, W., Proyer, R. T., & Weber, M. (2010). Humor as character strength among the elderly: Empirical findings on age-related changes and its contribution to satisfaction with life. *Zeitschrift für Gerontologie und Geriatrie*, 43, 13-18. doi:10.1007/s00391-009-0090-0

- Ruch, W., Proyer, R. T., Esser, C., & Mitrache, O. (2011). Cheerfulness and everyday humorous conduct. In Romanian Academy: Yearbook of the 'George Baritiu' Institute of History in Cluj-Napoca (Ed.), *Series Humanistica* (pp. 67-87, Vol. IX). Bucharest, Romania: Romanian Academy Publishing House.
- Schermer, J. A., Martin, R. A., Martin, N. G. Lynskey, M., & Vernon, P. A. (2013). The general factor of personality and humor styles. *Personality and individual differences*, 54, 890-893. doi: 10.1016/j.paid.2012.12.026
- Shimai, S., Otake, K., Park, N., Peterson, C., & Seligman, M. E. P (2006). Convergence of character strengths in American and Japanese young adults. *Journal of Happiness Studies*, 7, 311 – 322. doi:10.1007/s10902-005-3647-7
- Zhao, J., Wang, Y. & Kong, F. (2014). Exploring the mediation effect of social support and self-esteem on the relationship between humor style and life satisfaction in Chinese college students. *Personality and Individual Differences*, 64, 126-130. doi:10.1016/j.paid.2014.02.026

GENERAL DISCUSSION

This thesis aimed to integrate sense of humor in the framework of positive psychology, namely character strengths, virtues, and life satisfaction in order to draw a complete picture of their relations. The most comprehensive model of sense of humor so far is the taxonomy of the HBQD (Craig et al., 1996). For this reason, the HBQD was used in each part of the study since it is taken as a reference scale for sense of humor.

A) The relationship between sense of humor, character strength and virtues. Part 1 of the thesis aimed to examine the relations between sense of humor, character strength, and virtues. In a first step humor as a strength measured with the VIA-IS was investigated more deeply in order to compare it with the sense of humor measured with the SHS and located humor as a strength within the dimensions of humorous behavior measured with the HBQD. This was done because studies examining character strengths with the VIA-IS showed that humor as strength is related to outcomes that are of interest to positive psychology (e.g. life satisfaction). Understanding which facets of sense of humor are measured in the VIA-IS helps integrate the findings in humor research. Until present, only Edwards and Martin (2014) examined the localization of humor as a strength in one conceptualization of sense of humor, namely the humor styles of the HSQ. They found humor in the VIA-IS positively correlated with affiliative humor and self-enhancing humor. The authors concluded that humor as a strength captures forms of humor that are used to bond with others, reduce interpersonal tension, and cope with stress. The authors expected a negative relation to the negative HSQ humor styles, since they assumed that humor as a strength is also defined by the absence of negative uses of humor. The results of the study did not confirm this assumption. The negative HSQ humor styles were unrelated to humor in the VIA-IS. The study of Edwards and Martin (2014) investigated the HSQ humor styles only. For a more accurate understanding of humor in the VIA-IS and its correlations, it is of great interest to

localize humor as a strength in a more comprehensive framework of sense of humor.

Therefore, in part I of this thesis humor in the VIA-IS was localized in a multidimensional framework of sense of humor, namely in the dimensions of humorous behavior of the HBQD, and the multi-faceted sense of humor scale (SHS).

Humor in the VIA-Classification of strength is described as good natured and positive. Therefore, a high convergence with the sense of humor and the socially warm humorous style of the HBQD was expected, since they all are described by positive emotions and laughter. The results of study 1 confirmed these expectations. Humor as a strength, sense of humor (in all of its facets), and socially warm humor do overlap to a great extent. Additionally, competent humor related to humor as a strength and sense of humor. However, not all of the facets of sense of humor were related to competent humor; enjoyment of humor and laughter were not related. Regression analysis brought earthy humor also to be a good predictor for humor as a strength, and earthy and reflective humor proved to be good predictors for sense of humor, while in zero order correlations these were unrelated. These findings brought evidence that sense of humor and humor as a strength are not only composed of warm and good natured facets of humor. The ability of being funny by, for example, telling a joke effectively and an active wit are needed as well.

Further, the remaining dimensions of the HBQD were unrelated to humor as a strength as well. Reflective vs. boorish, and benign vs. mean-spirited humor are humor dimensions with a negative connotation. Humor as a strength is restricted to humor that is positive and serves some moral good (Peterson & Seligman, 2004). Even though it excludes negative forms, humor as a strength is not negatively correlated to these two dimensions. This might be due to the bipolarity of the dimensions.

These findings support the assumption that it is questionable whether this narrow view on humor in the VIA-classification of strength is sufficient for embedding humor in the

concept of virtues and strengths. Therefore, the next step of part I was of big importance: the relation between character strength, virtues and the humor styles of the HBQD (Craig et al., 1996) was examined. The goal was to draw inference, concerning whether the concept of humor as a strength is sufficient to gain a complete understanding of the relation between humor and life satisfaction. And furthermore, to contribute another piece to the discussion on the question, to which virtue humor might be assigned.

Therefore, the second aim of part I investigated the relation between the 24 character strengths of the VIA-IS, virtues, and the multidimensional sense of humor. Humor in the Classification of Strength (Peterson & Seligman, 2004) is assigned to the virtue transcendence. However, the studies of Beermann and Ruch (2009a, 2009b) and Proyer and Ruch (2015) give reason to the assumption that the assignment to transcendence is not necessarily the best. Part I of this thesis takes these studies up by examining correlational data. By doing so, the findings of part I will bring the literature on humor and virtues one step further. In this thesis the relation between multifaceted view on sense of humor, character strength (especially humor as a strength) and virtues, is investigated. Studies that bring concepts of positive psychology and such a broad spectrum of sense of humor together are rare. It is new in literature of positive psychology and humor that humor as a strength and the remaining 23 character strengths are localized in such a broad concept of sense of humor. This will help the understanding of how sense of humor and concepts of positive psychology are related and brings research about the role of sense of humor in positive psychology one step further. The expectations were to confirm previous findings, which were that humor might be a good vehicle to express humanity and wisdom and knowledge

For wisdom and knowledge, it was expected to correlate with mentally stimulating humor, which is found in the benign (vs. mean-spirited) humor of the HBQD. Temperance, humanity, and justice were expected to be related to the absence of mean-spirited humor,

since this humor facet focuses on humor that attacks and belittles others. Further, the repressed pole of earthy vs. repressed humor was expected to be related to temperance, since it focuses on a repression of humor about sexual or macabre topics.

As in earlier studies all six virtues were compatible with humor but the results brought evidence for the assignment of humor to humanity. Humor as a strength and its related concepts, socially warm humor and sense of humor, could all be best assigned to humanity. Regarding the relations between the virtues and the HBQD humor dimensions, the strongest relation was found with mean-spirited humor. These findings were mainly as expected: Justice, temperance, and transcendence (but not humanity) were negatively related to mean-spirited humor.

Humor seems to be a good vehicle to express humanity but it was also strongly related to all of the six virtues, aside from temperance. Probably the assignment to only one virtue does not satisfy the complexity of a multifaceted humor. Humor can be a mean to live at least five out of six virtues. This brings up the question whether it makes more sense to define humor as a virtue itself rather than as a mean to express the virtue, as we know it from the humanists in the 18th century who had seen humor as a cardinal virtue.

Peterson and Seligman (2004) define humor as a strength also by the relative absence of negative uses of humor. Results also showed indeed that the absence of mean-spirited and earthy humor is related to virtues. The absence of a certain facet of sense of humor might be seen as behavior leading to a virtue. This finding supports the conclusion of Leist and Müller (2013) who discussed that facets of sense of humor might not be considered being an isolated phenomenon. The facets must be examined as a whole and it is not only important which facet a person shows, but also which are not shown.

Part I brought evidence that it is of big importance to investigate sense of humor in a more comprehensive framework. The positive and benevolent humor of the character

strength is not sufficient for examining the relation to positive psychology outcomes as virtues and life satisfaction. However, literature on humor research showed that the dimensionality of sense of humor is not clear yet. Part II of this thesis makes an effort to close this gap in research and examines the dimensions of sense of humor.

B) The dimensions of sense of humor. Researchers agree that humor is a multidimensional phenomenon. However, until present there is still no agreement on the number of dimensions of sense of humor (Martin, 2007; Ruch, 2007). This thesis has the goal to draw a complete picture of the relationship between sense of humor and life satisfaction. As shown in part I, the unidimensional view on humor as a strength is not sufficient to cover all facets of sense of humor that might relate to positive psychology outcomes. Therefore, before investigating the relationship between sense of humor and life satisfaction, an intermediate step was necessary: In part II the dimensions of humor were investigated more accurately. This thesis makes an effort to close this gap by considering humor conceptualizations and measurement tools, which cover a wide choice of humor facets and by considering peer-reports by investigating the dimensionality.

The first aim of the part II was to subject the 100 statements of humorous behavior of the HBQD to a hierarchical factor analytical analysis in order to examine the convergence to the factors found in Craik et al. (1996) or those in Kirsh and Kuiper (2003). The primary five bipolar factors (i.e., socially warm vs. cold, reflective vs. boorish, competent vs. inept, earthy vs. repressed, and benign vs. mean-spirited) of Craik et al. (1996) could not be replicated yet. Kirsh and Kuiper (2003) found seven factors, but they were unipolar (i.e., socially warm and general sense of humor, boorish, inept, conscious deliberate use of humor, intellectual humor, mean-spirited humor, and socially compensatory humor). However, of the primary 100 statements of humorous behavior they subjected only 60 items (the ones with the highest loadings in a principal component analysis) to a factor analysis. Even though they only used

the marker items of each pole the bipolarity was not replicated in the study of Kirsh and Kuiper (2003). Other studies also reported problems with the bipolarity (Ruch et al., 2011). Therefore, the expectation for the first aim of part II was that the bipolarity would not be replicated. Since some of the styles of humorous behavior were found to overlap to a great extent (Ruch et al., 2011) it was expected that reflective and benign, as well as socially warm and competent humor would load on the same factor.

The results confirmed the expectations. Only four basic dimensions are needed to describe humor. Socially warm and competent humor integrate on a joint factor. Entertaining humor, reflective and benign were found to build a factor cognitive playfulness. Further, the two dimensions with a negative connotation were found to build one single separate factor, mean-spirited and earthy humor. Inept humor kept on a separate dimension. The dimensions cover affective, cognitive and the humorless/dysfunctional use of humor.

The results further showed that the four dimensions are not set in stone. Five or six dimensions were possible as well. However, only few items supported them. This leads to the question whether the item pool of the HBQD was actually all encompassing. Is it necessary to add some items since the original item pool is already 20 years old? New technologies such as social media and the Internet emerged and influenced our humorous behavior. These aspects are missing in the HBQD items. What if the item pool was enlarged? Would these two dimensions get some more support then?

Further, as expected, the factors found were unipolar, while Craik et al. (1996) found bipolar factors. Bipolar humorous dimensions imply that every person has humor because humor on one dimension is seen as a continuum. Further, if a person shows high scores on one end of the pole, he or she cannot be high on the other end. This is also an advantage of the ipsative format in the original HBQD. Every person has to be high in at least one humorous dimension, whereas with unipolar dimensions, a person can show low (or high)

scores on all dimensions. What are the consequences of these unipolar dimensions found in part II compared to the bipolar dimensions of the origin HBQD? Further research might investigate this question more deeply.

In part I the relation between character strengths, virtues and humorous behavior of the HBQD was examined. Are the results of part I still valid when investigating the relation with the dimensions extracted in part II? For the first dimension, mean-spirited and earthy humor, one can assume that the absence of this humor might display a behavior of virtue, since it is comparable to the former mean-spirited and earthy humor. Entertaining humor might probably be the closest to humor as a strength in the VIA and therefore relate to humanity. Due to its cognitive element cognitive playfulness might be related to wisdom and knowledge. Finally, inept humor might probably be unrelated to the virtues. These are expectations only and must be examined in further studies.

The second aim of part II was to compare the hierarchical emerge of self- and peer-rated factors of the 100 statements of the HBQD. This was done to test whether the structure of self- and peer-rated humor is comparable. Findings of previous studies rely on self-rated humor only. The comparison of self- and peer-rated data is an important contribution to humor research since it brings more valid and robust results.

As expected, the overlaps of the hierarchical emergence of the factors in the self- and peer-ratings were high until level four. The convergence of the four factors of the self- and peer-ratings was high, and therefore the factors were treated as equivalent. While all of the factors were unipolar in the self-ratings, the third factor, inept humor, had an opposite pole labeled good sense of humor in the peer-ratings. The factors were labeled as follows: mean-spirited and earthy humor, entertaining humor, inept (vs. good sense of) humor and cognitive playfulness. On level five and six of the hierarchical emerge, the overlap between self- and

peer-rated humor was lower for the dimensions five and six. This was also a strong indicator for the assumption that four dimensions are enough to describe humor.

The third aim of part II was to test the derived factor scores in a multimethodological approach to test their overlap with existing humor conceptualizations and personality. The present study expands the existing literature by not only investigating the structure but also testing the associations of the factors with existing humor scales and personality. To test where in the factor space current measures are located it is necessary to consider several methods (i.e., self-reports, peer-reports and performance tests) and different humor concepts. The factor scores of the self- and peer-rated HBQD items were correlated with existing conceptualizations of sense of humor (comic styles in self- and peer-ratings; potentially beneficial and detrimental humor styles), the temperamental basis of humor (in self- and peer-ratings), performance tests (humor appreciation and humor production), the disposition towards laughter, and the Big Five personality dimensions to test their overlap.

All of the investigated humor self-rating scales could be well located in these four factors. However, humor production is not embedded in these four dimensions, because performance tests build their own category in the measurement of humor (Köhler & Ruch, 1996) since they are a different method of measurement. Moreover, performance tests are not yet as thoroughly studied as self-report scales are and thus they might not properly measure humor performance. This link between self-report scales and performance tests is very important for the future of humor research, since self-report data rely on how a person rates his or her humor, whereas performance tests are based on humor production which is rated by others. Further, the humor produced in the CPPT was not investigated in more detail in order to allocate it to the four dimensions found with the HBQD items. Probably the rating of the used facets of sense of humor might correlate with the corresponding dimension of sense of humor. In this study only the funniness, the originality, and the number of the written

punchlines was measured. Those clearly do not overlap with the rated facet of sense of humor.

The fact that all of the sense of humor conceptualizations were well located in the dimensions of the HBQD items hypothesize that the HBQD is indeed a comprehensive measure for all existing facets of sense of humor. This finding is of big importance for future humor research.

C) Sense of humor and its relation to life satisfaction. In part III of the thesis the dimensions of the hierarchical emerging from level one to six of part II were tested for their association with life satisfaction. The relation was tested for both, self- and peer-rated sense of humor and life satisfaction. The aim was to find out the factor solution that explains life satisfaction best. The results showed that two factors are sufficient to investigate the relationship between humor and life satisfaction. Probably the differentiation between beneficial humor facets and humor facets with negative influence might provide sufficient information to investigate the cognitive life satisfaction. This finding is also in accordance with the findings of Martin (2007) and Jovanovic (2011). Although for a better understanding of humor and its functions it remains important to consider all four humor dimensions. The investigation of the associations between humor factors of each further step and life satisfaction showed that inept humor (in self- and peer-ratings) shared substantial variance with life satisfaction as well. This information is of relevance when investigating the role of humor in positive psychology.

In the self-ratings, entertaining humor was positively and mean-spirited and earthy humor negatively related to life satisfaction until level four of the analysis. In level five the correlations lowered and remained not significant. In existing literature, the humor facets related to mean-spirited and earthy humor usually remained unrelated to life satisfaction. Further, in level five the factor laughter splits from entertaining humor. Laughter is positively

related to life satisfaction. It seems that it is the laughter part of entertaining humor that brought the relation to life satisfaction in level two to four.

In the peer-ratings the correlation pattern was comparable. Peer-rated mean-spirited and earthy humor, and inept vs. good sense of humor were negatively related to peer-rated life satisfaction, while for entertaining humor a positive relation was found. Differently to the self-ratings, the relations for mean-spirited and earthy humor were found for all six levels. For entertaining humor, it was only found for level two, three, and six. When investigating self-rated life satisfaction and peer-rated humor, only entertaining humor is related to self-rated life satisfaction.

The second aim of part III was to investigate the relations between self- and peer-rated life satisfaction and the temperamental basis of humor, the three dispositions towards ridicule and laughter, and the four styles of the HSQ. To get a better understanding of the relationship between humor and life satisfaction the correlations were controlled for personality. This was done to examine whether sense of humor predicts variance in life satisfaction independent from personality. It was expected to find positive relations to cheerfulness, affiliative, and self-enhancing humor, and negative relations to bad mood, self-defeating humor, and gelotophilia, since existing literature found similar results (Dyck & Holzmann, 2013; Edwards & Martin, 2014; Jovanovic, 2011; Ruch & Heintz, 2014). Further, it was expected that the correlations were lowered when controlled for personality.

For the self- and peer-ratings the correlation pattern was as expected. Cheerfulness, affiliative, and self-enhancing humor were positively related to self-rated life satisfaction, gelotophobia, and self-defeating humor were negatively related. Additionally, those scoring high on gelotophilia and low on seriousness reported higher life satisfaction. Aggressive humor was unrelated to life satisfaction. The analysis of part II showed that aggressive humor

is localized in the dimensions mean-spirited and earthy humor, which was found to be related to life satisfaction. How do these humor facets differentiate?

Regarding the influence of personality on the relationship, the correlations were lower than expected. The relationship was strongly influenced by personality. If controlled from personality only self- and peer-rated traits of the temperamental basis of humor such as cheerfulness and bad mood and self-rated self-enhancing and self-defeating humor of the Humor Styles Questionnaire (Martin et al., 2003) showed a robust relation to a satisfied life. Even though three concepts of cheerfulness, affiliative humor, and self-enhancing humor share a great portion of common variance, affiliative humor does not predict life satisfaction over personality. While affiliative humor is defined by use of humor in social settings, for social bonding, the focus on self-enhancing humor is more intrapsychic (Martin et al., 2003). Due to its intrapsychic focus the overlap with extraversion is low, while affiliative humor might be localized in extraversion. Therefore, affiliative humor is not able to predict life satisfaction over and above personality. Further, the definition of self-enhancing humor is covered by three (out of five) facets of cheerfulness (facet 1: a prevalence of cheerful mood, facet 2: a low threshold for smiling and laughter, and facet 3: a composed view of adverse life circumstances; Ruch et al., 1996).

To summarize, the results indicate that sense of humor and personality are closely linked. The incremental validity for sense of humor to predict life satisfaction over and above personality is low. Only cheerfulness, bad mood, and self-enhancing humor were able to predict life satisfaction detached from personality. However, cheerfulness and bad mood are traits of the temperamental basis of humor and do therefore not belong to sense of humor itself. The broaden-and-built theory (Fredrickson, 2001) sees positive emotions as a vehicle for individual growth and social connections, which in turn contribute to more effective functioning in everyday life and finally contribute to life satisfaction. The temperamental

basis of humor builds the ground for the positive emotion, exhilaratability, which again might be the cause why cheerfulness and bad mood are related to life satisfaction. The temperamental basis of humor is able to predict most of the facets of sense of humor as well, which therefore are related to life satisfaction. However, the temperamental basis of humor is driven by the emotion exhilaratability while sense of humor is driven by the Big Five personality dimensions and therefore the temperamental basis of humor is able to predict life satisfaction over and above personality while sense of humor is not.

The inclusion of peer-reports was a new contribution to humor research. The results were comparable to those from the self-ratings which is a good finding since the multimethodological approach strengthens the results and allows for more valid and robust statements.

Strength and limitations

This thesis makes an effort to close several gaps in humor and positive psychology research. A big strength of the thesis is its broad scope in the measurement of humor. It is not restricted to one conceptualization or measurement tool. Rather, it includes humor questionnaires that prevail over the whole spectrum in humor research. The thesis also includes humor performance tests and humor related concepts as the temperamental basis of humor and three dispositions towards laughter. This multimethodological measure is a new approach in humor research aiming to cover a set of facets of sense of humor as comprehensively as possible and bringing these in relation to variables of positive psychology. This broad multimethodological measure of sense of humor is an important contribution to research since the numbers of dimensions of sense of humor are not clear yet. Therefore, to make meaningful statements, it is of great importance to consider as many facets of sense of humor and humor related phenomena as possible.

Further, literature review showed that peer-reports are rare in humor research. Peer-reports are necessary for providing valid statements (Paunonen & O'Neill, 2010). A big strength of this thesis is the integration of peer-rated humor and life satisfaction. This makes the statements made in the thesis more stable and generalizable, and further helps controlling the method bias and effect of social desirability.

Integrating the Big Five personality factors as the main hinge between humor and life satisfaction is an important variable in the whole research on the predictors of life satisfaction. Earlier research showed, that only few facets of sense of humor are able to predict life satisfaction over and above personality. To tie on these results by investigating a comprehensive set of facets of sense of humor, and how these are able to predict life satisfaction, over and above personality, brings literature on sense of humor and positive psychology one step further.

Another big strength of the thesis is the broad connection to positive psychology. It was not only investigated how sense of humor is able to predict life satisfaction, but the broad scope of sense of humor was also brought into relation with character strength and virtues. This correlational analysis is new in research since earlier studies relied on expert and lay persons' ratings. It helps strengthening earlier findings by replicating the results with other methods.

However, there are some limitations of the thesis that should be outlined. The 100 statements of humorous behavior were used as a reference in all three studies. Since the HBQD is the most comprehensive model of humor so far it was only consequential to take this as a reference. However, the statements were constructed in 1996 and might therefore be out of date by now. Further new forms of humor arrived over the years. For example, the Internet and social media are new platforms to consume or spread humor. We don't know yet, whether they integrate into the existing model. To get a comprehensive picture on the

state of humor in these days it would have been better to create a completely new questionnaire, considering the findings of Ruch and Heintz (2013) as well. The study showed how important an accurate construction of a humor questionnaire is. An all-encompassing humor questionnaire might also overcome the problem of the lengths of the studies. Due to the thesis' claim for investigating all humor facets, the studies became long and therefore the drop out quote was high. If a humor scale is able to cover all humor facets it might be more economic and therefore help shorten the effort for the participants.

For assessing the Comic Styles (Schmidt-Hidding, 1963) a new questionnaire was developed in part II. The items of the CSQ were closely reclined to the original wording of Schmidt-Hidding. For this reason, the items became difficult to understand. This might be a reason why only weak relations to the other scales were found. However, the measurement of humor in the narrow sense (i.e., as a part of the comic) is neglected in humor research so far. Therefore, future studies might make an effort to develop a scale to measure the comic styles.

For the relation between sense of humor and life satisfaction only correlational data were investigated in this thesis. Correlations are not able to make statements about the causality of the relation. We know from humor trainings that causality might be expected in terms of sense of humor predicting life satisfaction. However, these findings only exist for positive facets of sense of humor. Future research might also examine the causality of the relation between negative facets of sense of humor and life satisfaction. Further, the relation of humor production and life satisfaction was not investigated in this study.

Implications for research and practice

To measure all facets of humor, an all-encompassing measurement tool that is up to date is still missing. This thesis covers the most comprehensive measurement of humor so far. It therefore builds a possible basis for future studies. Future research should focus on the construction of such a self-report questionnaire.

For positive psychologists, it is important to know that for prediction of life satisfaction only two dimensions seem to be sufficient: one refers to a positive and one to a negative use of humor. Further, the study showed, that most facets of sense of humor are not able to predict life satisfaction over and above personality. Cheerfulness and bad mood are the two traits of the temperamental basis of humor that still share unique variance with life satisfaction. Humor training and positive interventions that aim to raise life satisfaction might focus on interventions that train the positive emotions that can occur through humor.

Furthermore, humorlessness and inept humor are neglected in research. It might also be of interest to explore whether humorlessness exists at all and if humorless people also profit from humor training to increase life satisfaction.

References general discussion

- Beermann, U., & Ruch, W. (2009a). How virtuous is humor? Evidence from everyday behavior. *Humor: International Journal of Humor Research*, 4, 395-417. doi:10.1515/HUMR.2009.023
- Beermann, U., & Ruch, W. (2009b). How virtuous is humor? What we can learn from current instruments. *The Journal of Positive Psychology*, 4, 528-539. doi:10.1080/17439760903262859
- Cohn, M. A., & Fredrickson, B. L. (2009). Positive emotions. In C. R. Snyder & S. J. Lopez (Eds.), *The Oxford handbook of positive psychology*, (pp. 13-24). New York, NY: Oxford University Press.
- Craik, K. H., Lampert, M. D., & Nelson, A.J. (1996). Sense of humor and styles of everyday humorous conduct. *Humor: International Journal of Humor Research*, 9, 273-302. doi:10.1515/humr.1996.9.3-4.273
- Edwards, K. R., & Martin, R. A. (2014). The conceptualization, measurement, and role of humor as a character strength in positive psychology. *Europe's Journal of Psychology*, 10, 505-519. doi:10.5964/ejop.v10i3.759
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American psychologist*, 56, 218-226. doi:10.1037/0003-066X.56.3.218
- Jovanovic, V. (2011). Do humor styles matter in the relationship between personality and subjective well-being? *Scandinavian Journal of Psychology*, 52, 502-507. doi:10.1111/j.1467-9450.2011.00898.x
- Kirsh, G. A., & Kuiper, N. A. (2003). Positive and negative aspects of sense of humor: Associations with the constructs of individualism and relatedness. *Humor: International Journal of Humor Research*, 16, 33-62. doi:10.1515/humr.2003.004

- Köhler, G., & Ruch, W. (1996). Sources of variance in current sense of humor inventories: How much substance, how much method variance? *Humor: International Journal of Humor Research*, 9, 363–397. doi:10.1515/humr.1996.9.3-4.303
- Leist, A. K., & Müller, D. (2013). Humor types show different patterns of self-regulation, self-esteem, and well-being. *Journal of Happiness Studies*, 14, 551-569. doi:10.1007/s10902-012-9342-6
- Martin, R. A. (2007). *The psychology of humor: An integrative approach*. Burlington, MA: Elsevier Academic Press.
- Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. (2003). Individual differences in uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire. *Journal of Research in Personality*, 37, 48-75. doi:10.1016/S0092-6566(02)00534-2
- Peterson, C., & Seligman, M.E.P. (2004). *Character strengths and virtues: A handbook and classification*. New York: Oxford University Press/Washington, DC: American Psychological Association.
- Ruch, W. (2007). Sense of humor: A new look at an old concept. In W. Ruch (Ed.), *The Sense of Humor: Explorations of a personality characteristic*. (pp.3-14). Berlin, D: Mouton de Gruyter.
- Ruch, W., & Heintz, S. (2013). Humour styles, personality and psychological well-being: What's humour got to do with it? *European Journal of Humour Research*, 1, 1–24.
- Ruch, W., Köhler, G., & van Thriel, Ch. (1996). Assessing the “humorous temperament:” Construction of the facet and standard trait forms of the State-Trait-Cheerfulness-Inventory-STCI. Measurement of the sense of humor [special issue]. *Humor: International Journal of Humor Research*, 9, 303-339. doi:10.1515/humr.1996.9.3-4.303

- Ruch, W., & Proyer, R. T. (2015). Mapping strengths into virtues: the relation of the 24 VIA-strengths to six ubiquitous virtues. *Frontiers in Psychology*, 6.
doi:10.3389/fpsyg.2015.00460
- Ruch, W., Proyer, R. T., Esser, C., & Mitrache, O. (2011). Cheerfulness and everyday humorous conduct. In Romanian Academy, “George Barit“ Institute of History, Department of Social Research (Ed.), *Studies and researches in social sciences (Vol. 18)*. Cluj-Napoca, Romania: Argonaut Press.
- Schmidt-Hidding, W. (1963). *Europäische Schlüsselwörter, Band I: Humor und Witz* [*European key words. Volume 1: Humor and Wit*]. München, Germany: Huber.